
Chapter 5

Organic Air Emission Control Requirements for HW Tanks

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5.1 Introduction

5.1.1 Background

On December 6, 1994, the Environmental Protection Agency promulgated the first of several final rules regulating volatile organic (VO) air emissions from certain waste management units, including HW tanks (. This rule has been codified as 40 CFR Parts 264/265, Subpart CC, Air Emission Standards for Tanks, Surface Impoundments, and Containers. These standards were established to control the formation of ambient ozone and to reduce adverse human health effects from the inhalation of air toxics. Under these standards, air emission controls must be used for tanks in which HW is placed except under certain conditions as specified in the rule.

The final Subpart CC tank standards are separated into two levels (Tank Level 1 and TankLevel 2). Tank Level 2 controls specify that the owner/operator must install and operate one of the following:

- A fixed-roof tank equipped with an internal floating roof;
- A tank equipped with an external floating roof;
- A tank vented through a closed-vent system to a control device;
- A pressure tank; or
- A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device.

The rule also allows HW to be placed in tanks with a fixed roof equipped with closure devices that form a continuous barrier over the entire surface area of the hazardous waste in the tank (i.e., Tank Level 1 controls) provided three conditions are met. These three conditions are:

- The maximum organic vapor pressure (MOVP) of the HW in the tank must be less than the limit established in the rule based on tank design capacity;
- The waste is not heated to a temperature that is greater than the temperature at which the MOVP is determined, and
- No treatment using a waste stabilization process occurs in the tank.

This rule has been promulgated under the authority of RCRA Section 3004(n), a provision added to RCRA by the Hazardous and Solid Waste Amendments of 1984 (HSWA). Therefore, these requirements became effective in States with authorized RCRA programs at the same time as in States without authorized RCRA programs.

EPA required that owners/operators of TSDFs for which a final permit has been issued by the EPA prior to December 6, 1996, must comply with the air emission control requirements for interim status TSD facilities under 40 CFR Part 265, Subparts AA, BB, and CC until the facility's permit is reviewed or reissued by the

EPA. In this instance, EPA has deviated from its normal practice of allowing regulated site's to use their "permit as a shield," because the Agency feels that the risks to human health and the environment from these VO air emissions is too great to allow any more time to pass before requiring compliance at permitted facilities.

5.1.2 Major Requirements

This chapter has been organized into six modules. Issues addressed in these modules include exemptions to the organic air emission control requirements for HW tanks, selection of appropriate covers and control devices, inspection and monitoring of covers, closed-vent systems and control devices, and recordkeeping and reporting requirements.

- Module A: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks
- Module B: General Organic Air Emission Control Requirements for HW Tanks
- Module C: Requirements for Closed-vent Systems and Control Devices
- Module D: Inspection and Monitoring
- Module E: Recordkeeping Requirements
- Module F: Reporting Requirements

The effective date for these regulations has been extended numerous times by the EPA. [See 60 *FR* 26828, 60 *FR* 56952, and 61 *FR* 59932]. Final Subpart CC standards became effective on **December 6, 1996**. These standards were issued in the following DOE-relevant *Hazardous Waste Treatment, Storage and Disposal Facilities: Organic Air Emission Standards for Tanks, Surface Impoundments, and Containers* notices:

- *Final Rule*, 59 *FR* 33490, December 6, 1994;
- *Final Rule, Notice of Postponement of Effective Date*, 60 *FR* 56952, November 13, 1995;
- *Final Rule, Technical Amendment*, 61 *FR* 4903, February 9, 1996;
- *Final Rule, Amendments of Final Rule To Postpone Requirements*, 61 *FR* 28508, June 5, 1996;
- *Final Rule*, 61 *FR* 59932, November 25, 1996;
- *Clarification and Technical Amendment*, 62 *FR* 64636, December 8, 1997; and
- *Final Rule*, 64 *FR* 3382, January 21, 1999.

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5.2 Module A: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks

5.2.1 Introduction

The EPA has provided several exemptions to the organic air emission control requirements of 40 CFR Parts 264/265, Subpart CC, for certain HW tanks that are no longer receiving waste. EPA has also deferred application of these regulations to HW tanks that are used solely to treat or store HW generated on-site from remedial activities conducted under RCRA or CERCLA authorities, or tanks that are used solely to manage radioactive mixed waste.

Owners/operators of HW tanks may also determine that the Subpart CC regulations do not apply to tanks under their authority based upon the average VO concentration of the HW: (1) at the point of waste origination, or (2) at the point of waste treatment by an organic destruction or removal process that achieves certain conditions. Also, owners/operators may determine that the Subpart CC regulations do not apply when certain treatment processes destroy, remove, or degrade organics such that conditional rates or efficiencies are realized. The owner/operator of such a tank, however, will need to comply with a few recordkeeping requirements found in Module 5E, Recordkeeping Requirements.

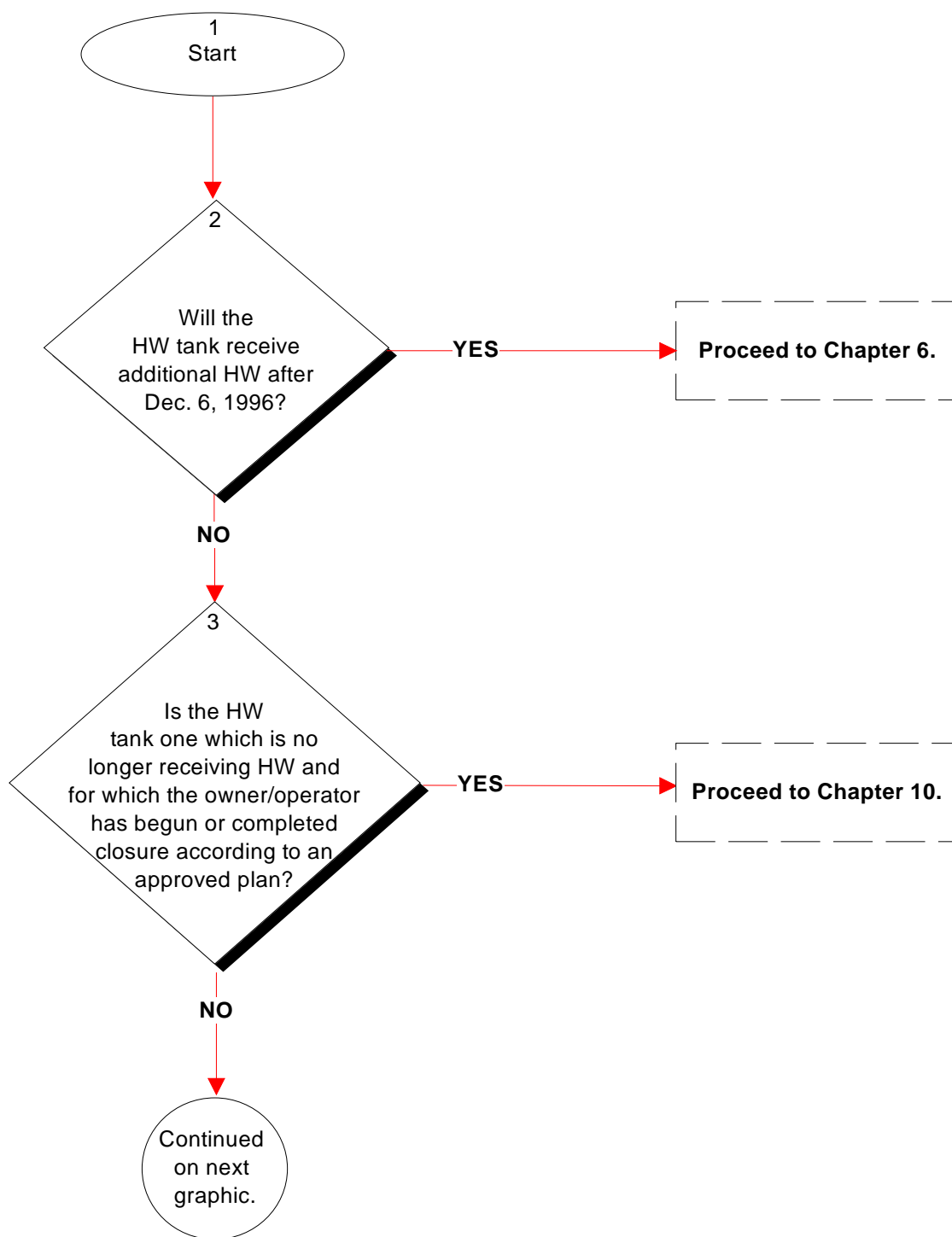
5.2.2 Milestones

Is the HW tank exempted from 40 CFR 264/265, Subpart CC regulations?

Exempted tanks that may be relevant to Departmental activities are those which:

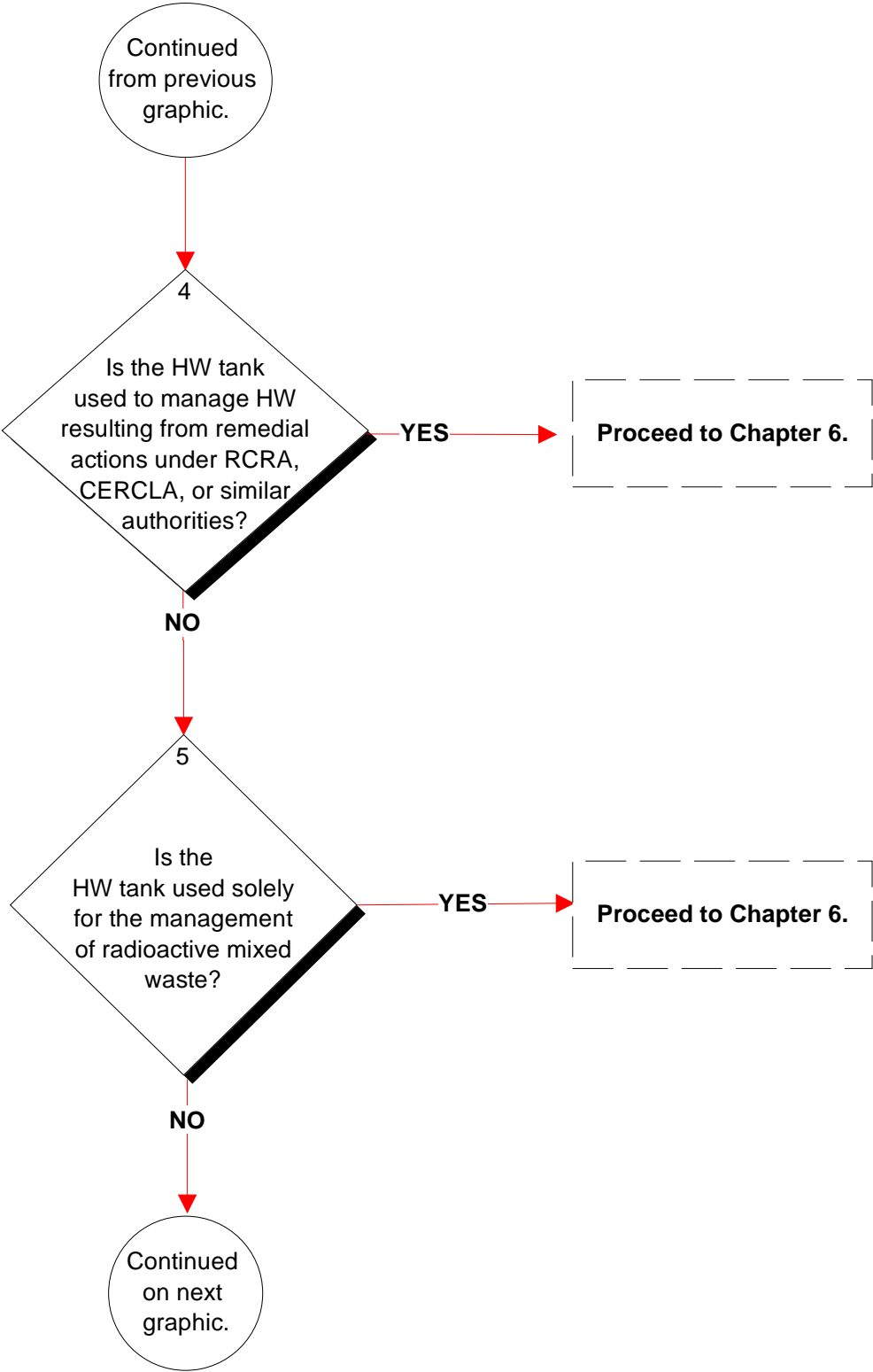
- Are no longer receiving HW after December 6, 1996;
- Are no longer receiving HW and are being closed pursuant to an approved closure plan;
- Are being used for on-site treatment or storage of HW that is placed in the tank as a result of implementing remedial activities;
- Are being used solely for the management of radioactive mixed waste;
- Are equipped and operating in accordance with certain codified Clean Air Act (CAA) regulations, when applicable;
- Are equipped with process vents as defined in 40 CFR 264.1031;
- Are receiving a HW that has an average volatile organic (VO) concentration at the point of waste origination of less than 500 parts per million by weight (ppmw);
- Are receiving a HW whose organic content has been reduced by a destruction or removal process that meets prescribed conditions;
- Receive HW that meets all applicable concentration-based or specified technology-based land disposal restrictions (LDR) treatment standards; and
- Are located inside an enclosure vented to a 40 CFR part 61, Subpart FF control device that is used for bulk feed of hazardous waste to an incinerator.

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks



- Step 1** Start.
- Step 2** A waste management unit that holds HW placed in the unit before December 6, 1996, and in which no HW is added to the unit on or after December 6, 1996, is exempted from the requirements of 40 CFR Part 264/265, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.
- Step 3** A tank which is no longer receiving HW and for which closure has begun or has been completed is not subject to the requirements of 40 CFR Part 264, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



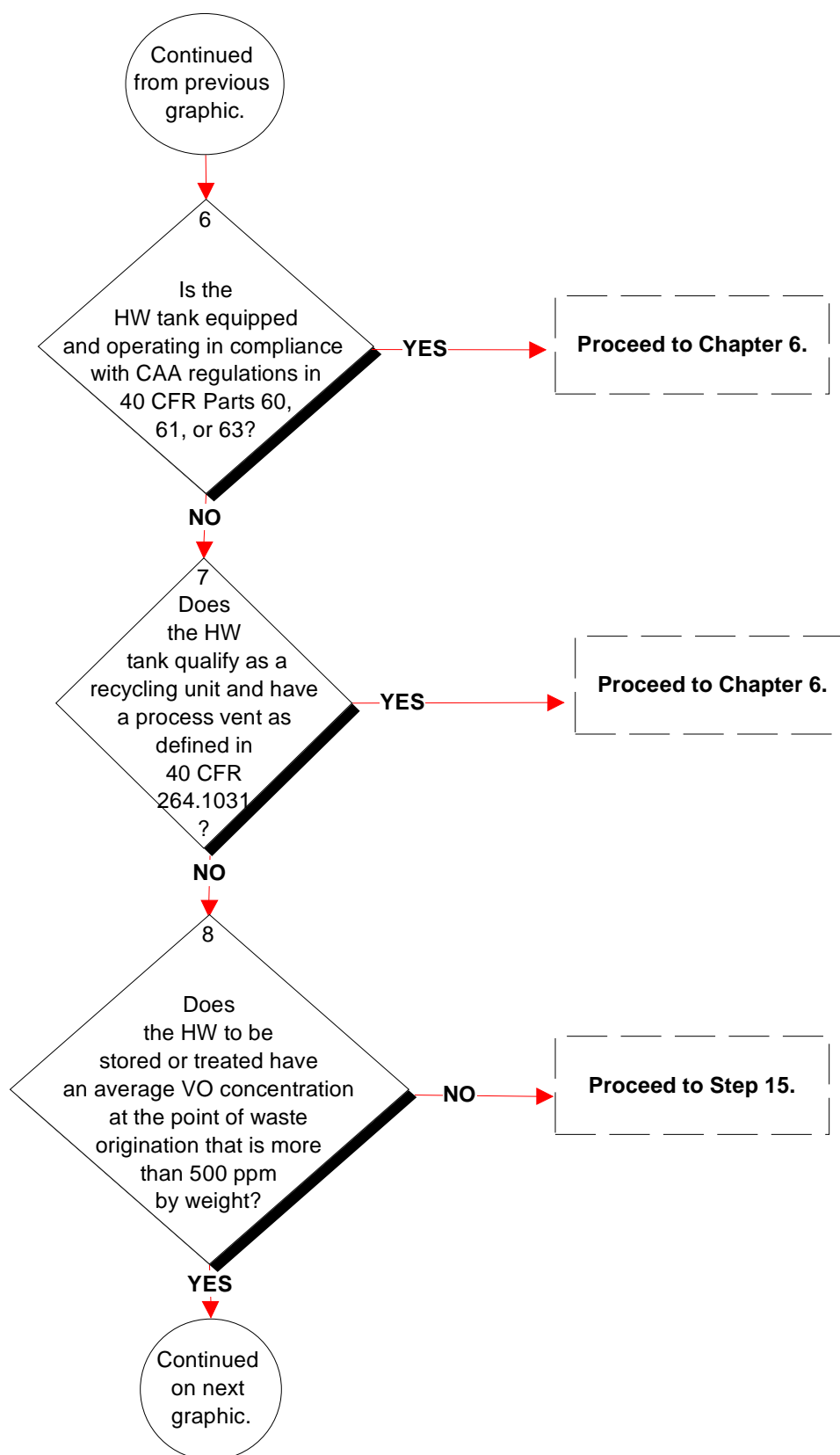
Step 4 A waste management unit that is used solely for on-site treatment or storage of HW that is placed into the tank as the result of implementing remedial activities required under:

- RCRA Sections 3004(u), 3004(v) or 3008(h) corrective action authorities;
- CERCLA authorities; or
- Similar Federal or State authorities;

is not subject to the requirements of 40 CFR Parts 264/265, Subpart CC: Air Emission Standards for Tanks, Surface Impoundments, and Containers.

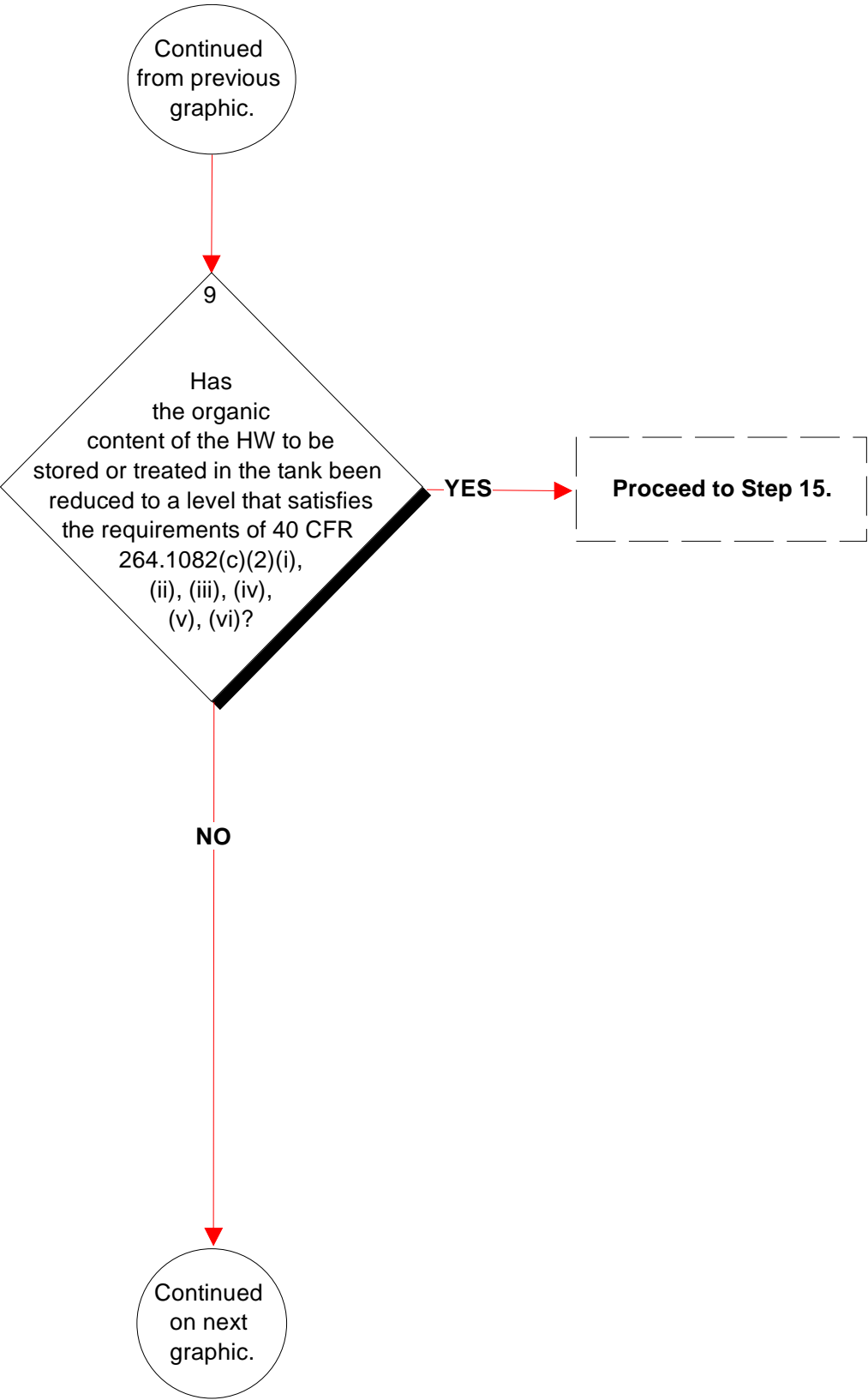
Step 5 A waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act. Further clarification of this exemption is provided in an EH-413 Technical Assistance Project (TAP) titled [*RCRA Subpart CC Organic Air Emission Standards Technical Amendment: Questions and Answers, DOE/EH\(RCRA\)-9701 \(March 1997\)*](#).

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



- Step 6** To eliminate any regulatory overlap, EPA exempts from Subpart CC any HW tank that the owner or operator certifies is equipped with and operating organic air emission controls in accordance with an applicable CAA regulation codified under 40 CFR part 60, part 61, or part 63, with the sole exception of tanks being controlled through the use of an enclosure rather than a cover. Note that a unit that does not use the required air emission controls but is in compliance with a NESHAP through an "emission averaging" or "bubbling" provision does not qualify for the exemption. Similarly, if the CAA standard for the particular unit is no control, the exemption from the RCRA standards would not apply.
- Step 7** Regulations for recyclable materials at 40 CFR 261.6(d) do not require that recycling units must comply with the Subpart CC provisions. Rather, recycling units typically emit air pollutants through some type of process vent and consequently are controlled under the 40 CFR Parts 264/265, Subpart AA standards. Emission mechanisms for conventional HW storage tanks differ significantly from the emission mechanism of the distillation-type unit used for recycling and certain treatment operations (e.g., air strippers, thin-film evaporators) regulated under Subpart AA. Thus, suppression-type controls (e.g., covers) prescribed for conventional storage and treatment tanks in Subpart CC simply are not suitable for most distillation-type units.
- Step 8** If the average VO concentration of the hazardous waste at the point of waste origination is less than 500 parts per million by weight (ppmw), the HW storage or treatment tank will not be subject to the requirements of 40 CFR Part 264.1084 (Standards: Tanks) and 264.1087 (Standards: Closed-vent Systems and Control Devices). The VO concentration at the point of waste origination for a HW shall be determined in accordance with the procedures specified in 40 CFR 265.1084(a)(2) through (a)(4). See Appendix E for these procedures.

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



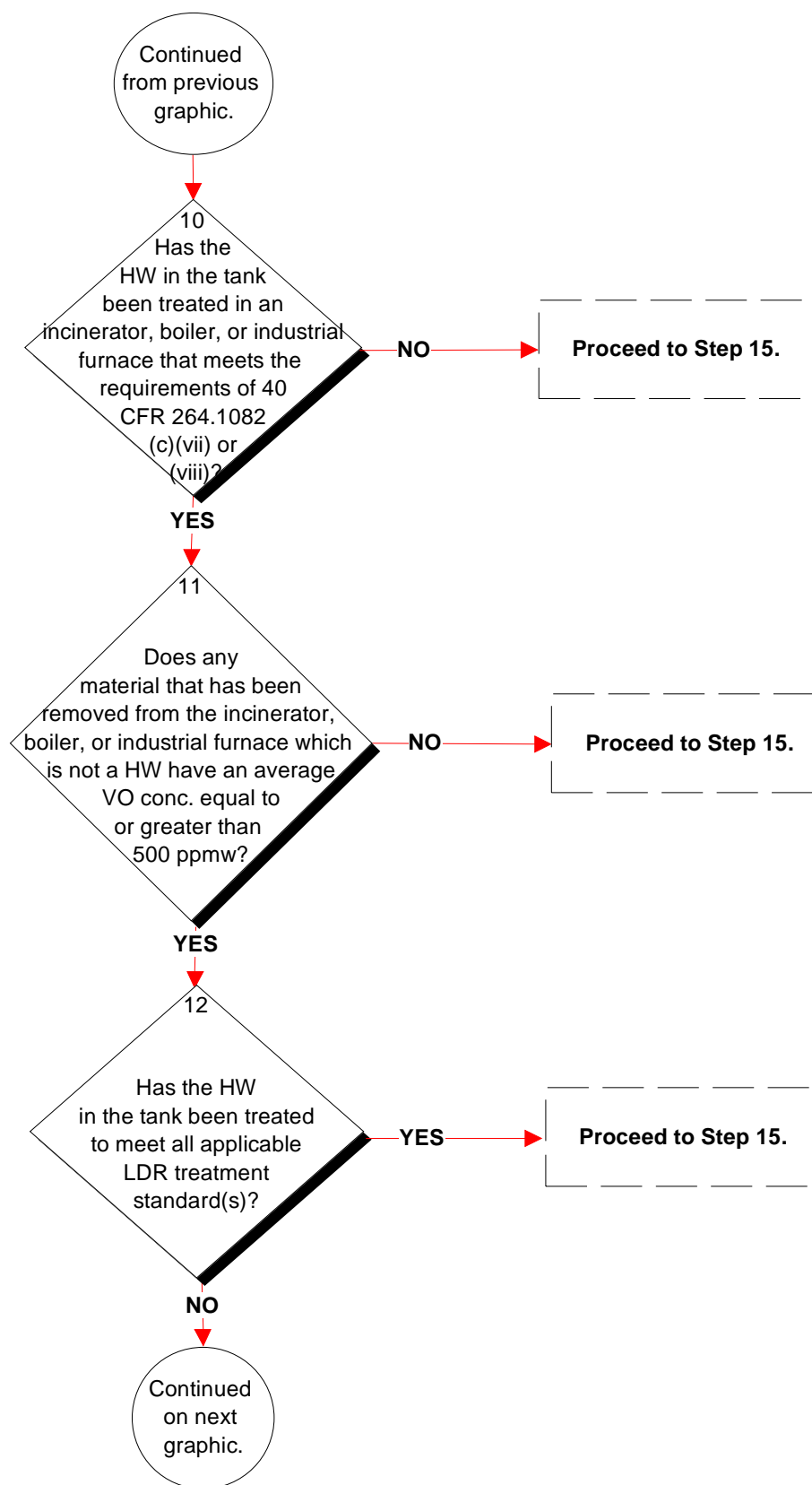
Step 9 The VO content may be reduced by a process that achieves any one of the following:

- Removal or destruction of the organics contained in the HW to a level such that:
 - The average VO concentration of the HW at the point of waste treatment is less than the exit concentration limit (C_t); or
 - The organic reduction efficiency (R) is equal to or greater than 95 percent, and the average VO concentration of the HW at the point of waste treatment is less than 100 ppmw; or
 - The actual organic mass removal rate (MR) is equal to or greater than the required organic mass removal rate (RMR); or
- Biological destruction or degradation of the organics contained in the HW, such that either of the following conditions is met:
 - The R for the process is equal to or greater than 95 percent, and the organic biodegradation efficiency (R_{bio}) is equal to or greater than 95 percent; or
 - The total actual organic mass biodegradation rate (MR_{bio}) for all HW treated is equal to or greater than the RMR ; or
- Removal or destruction of the organics contained in the HW and meets all of the following conditions:
 - From the point of waste origination through the point where the HW enters the treatment process, (1) the HW is managed continuously in waste management units that use RCRA Subpart CC organic air emission controls, as applicable; and (2) any transfer of the HW is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere. [NOTE: EPA considers a drain system that meets the requirements of 40 CFR part 63, subpart RR--National Emission Standards for Individual Drain Systems to be a closed system.]; and
 - The average VO concentration of the HW at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual HW streams entering the process or 500 ppmw, whichever value is lower; or
- Removal or destruction of the organics contained in the HW to a level such that the R for the process is equal to or greater than 95 percent and the owner or operator certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw.

Note: The average VO concentration of the HW at the point of waste treatment shall be determined using the procedure specified in 40 CFR 265.1083(b). See Appendix E for the procedures to be used to determine the average VO concentration of the HW at the point of waste treatment, the C_t , the R , MR , RMR , R_{bio} , and the MR_{bio} .

[40 CFR 264.1082(c)(2)(i), (ii), (iii), (iv), (v), (vi)]

Figure 5.1: Applicability of Organic Air Emission Control Requirements to Hazardous Waste Tanks - continued



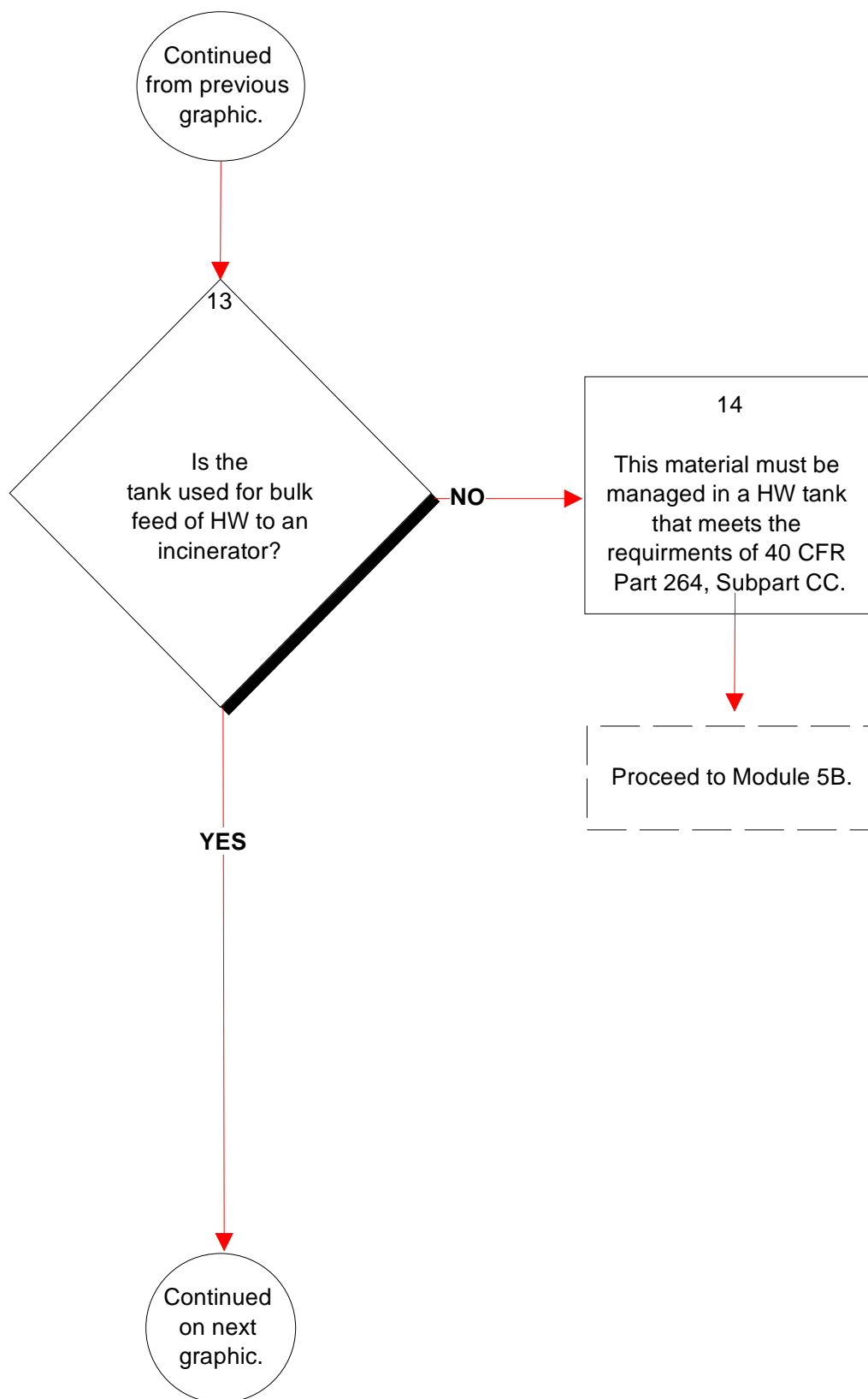
Step 10 The owner/operator may use a HW incinerator, boiler, or industrial furnace to reduce the organic content of the HW. If the incinerator, boiler, or industrial furnace meets the following conditions, the owner/operator will not be subject to the requirements of 40 CFR 264.1084 and 264.1087:

- A HW incinerator for which the owner/operator has either:
 - Been issued a final permit under 40 CFR Part 270, and operates the unit in accordance with the requirements of 40 CFR Part 264, Subpart O; or
 - Designed and operates the unit in compliance with the interim status requirements of 40 CFR Part 265, Subpart O.
- A boiler or industrial furnace for which the owner/operator has either:
 - Been issued a final permit under 40 CFR Part 270, and operates the unit in accordance with the requirements of 40 CFR Part 266, Subpart H; or
 - Designed and operates the unit in compliance with the interim status requirements of 40 CFR Part 266, Subpart H.

Step 11 When a removal process or an incinerator, boiler, or industrial furnace, is used for the purpose of treating a HW to meet one of the sets of conditions specified in Step 9 or Step 10, each material removed from or exiting the process that is not a HW but that has an average VO concentration equal to or greater than 500 ppmw shall be managed in a waste management unit in accordance with the requirements of 40 CFR Part 264, Subpart CC.

If the selected waste management unit is a HW tank, that tank will have to meet the requirements of 40 CFR Part 264, Subpart CC.

Step 12 HW tanks receiving hazardous waste for which the organic hazardous constituents have been treated to meet applicable LDR treatment standards by: (1) Being treated to meet the numerical, concentration-based limits, as specified in 40 CFR 268.40, table "Treatment Standards for Hazardous Waste," including universal treatment standards for underlying hazardous constituents under 40 CFR 268.48; (2) Being treated using the treatment technology established by EPA for the waste in 40 CFR 268.42(a); or (3) Being treated by an equivalent method of treatment approved by EPA pursuant to 40 CFR 268.42(b).

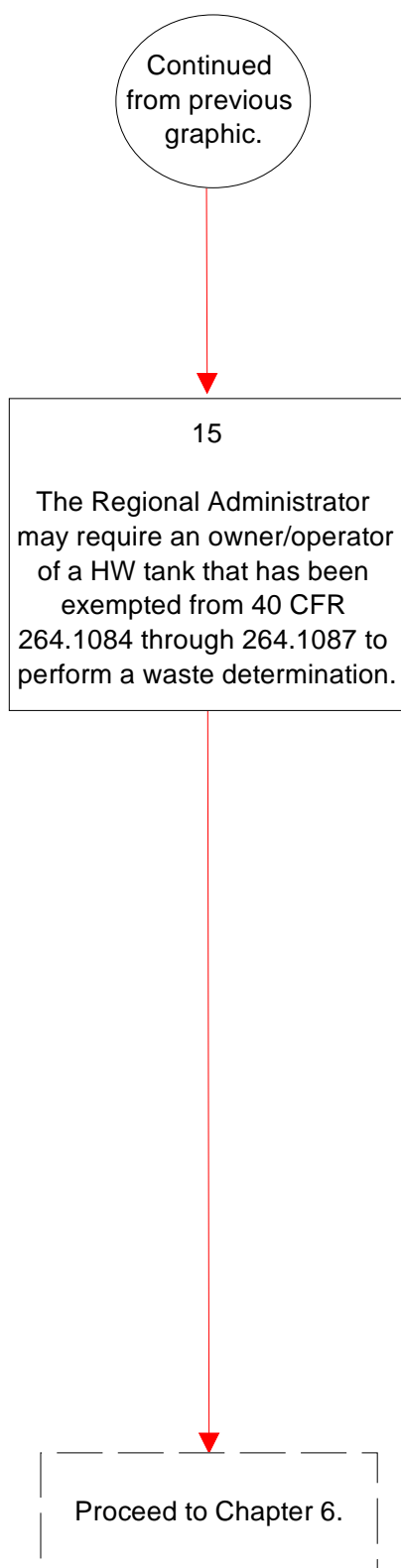


Step 13 HW tanks used for bulk feed of hazardous waste to a waste incinerator are exempt from HW tank standards provided all of the following conditions are met:

- The tank is located inside an enclosure vented to a control device that is designed and operated in accordance with all applicable requirements specified under 40 CFR part 61, subpart FF--National Emission Standards for Benzene Waste Operations;
- The enclosure and control device serving the tank were installed and began operation prior to November 25, 1996; and
- The enclosure is designed and operated in accordance with the criteria for a permanent total enclosure as specified in ‘‘Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure’’ under 40 CFR 52.741, appendix B. The enclosure, however, may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical or electrical equipment; or to direct air flow into the enclosure. The owner or operator shall perform the verification procedure for the enclosure as specified in Section 5.0 to ‘‘Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure’’ annually.

Step 14 40 CFR Part 264, Subpart CC, contains requirements for the various types of covers that may be used on HW tanks to control VO air emissions.

Note: For a facility subject to 40 CFR Part 264, Subpart CC that received a final permit under RCRA Section 3005 prior to December 6, 1996, the requirements of this subpart shall be incorporated into the permit when the permit is reissued in accordance with the requirements of 40 CFR 124.15 or reviewed in accordance with the requirements of 40 CFR 270.50(d). Until such date when the owner and operator receives a final permit incorporating the requirements, the owner and operator is subject to the requirements of 40 CFR Part 265, Subpart CC.



Step 15 The Regional Administrator may at any time perform or request that the owner/operator perform a waste determination for a HW managed in a tank exempted from using air emission controls [40 CFR 264.1082(d)]. The waste determination for the average VO concentration of a HW at the "point of waste origination" shall be performed using direct measurement in accordance with the applicable requirements of 40 CFR 264.1083(a). The waste determination for a HW at the "point of waste treatment" shall be performed in accordance with the applicable requirements of 40 CFR 264.1083(b).

If the owner/operator is requested to perform the waste determination, the Regional Administrator may elect to have an authorized representative observe the collection of the HW samples used for the analysis.

If the results of the waste determination performed or requested by the Regional Administrator do not agree with the results of a waste determination performed by the owner/operator using knowledge of the waste, then the results of the waste determination performed in accordance with the requirements 40 CFR 264.1083(a) and/or (b) shall be used to establish compliance.

If the owner/operator has used an averaging period greater than 1 hour for determining the average VO concentration of a HW at the point of waste origination, the Regional Administrator may perform or request that the owner/operator perform a waste determination using direct measurement based on waste samples collected within a 1-hour period.

Results of the waste determination performed or requested by the Regional Administrator showing that the average VO concentration of the HW at the point of waste origination is equal to or greater than 500 ppmw shall constitute noncompliance with 40 CFR Part 264, Subpart CC. One exception is provided for those instances when normal operating process variations cause the average VO concentration of the HW (as determined by direct measurement for any given 1-hour period) to be equal to or greater than 500 ppmw. In such instances, information that was used by the owner/operator to determine the average VO concentration of the HW at the point of waste origination (e.g., test results, measurements, calculations, etc.) to be less than 500 ppmw [recorded in the facility records in compliance with 40 CFR 264.1083(a) and 40 CFR 264.1089] shall be considered by the Regional Administrator together with the results of the waste determination performed or requested by the Regional Administrator [40 CFR 264.1082(d)(iii)].

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5.3 Module B: General Organic Air Emission Control Requirements

5.3.1 Introduction

As described in the introduction to this chapter, the owner/operator of a HW tank must manage affected HW in accordance with tank standards that are separated into two levels--Tank Level 1 and Tank Level 2. Upon determining that a HW is subject to Subpart CC, control level applicability depends on the following: (1) the HW tank design capacity and the maximum organic vapor pressure (MOVP) of the HW being stored, (2) whether heat is applied to the HW, or (3) whether the tank is used for waste stabilization processes. Tank Level 2 controls specify that the owner/operator must install and operate one of the following:

- A fixed-roof tank equipped with an internal floating roof;
- A tank equipped with an external floating roof;
- A tank vented through a closed-vent system to a control device;
- A pressure tank; or
- A tank located inside an enclosure that is vented through a closed-vent system to an enclosed combustion control device.

In addition to being allowed to use Tank Level 2 controls, some owners/operators also can use Tank Level 1 controls. Tank Level 1 controls allow HW to be placed in tanks with a fixed roof that is equipped with closure devices that form a continuous barrier over the entire surface area of the HW being stored in the tank.

5.3.2 Milestones

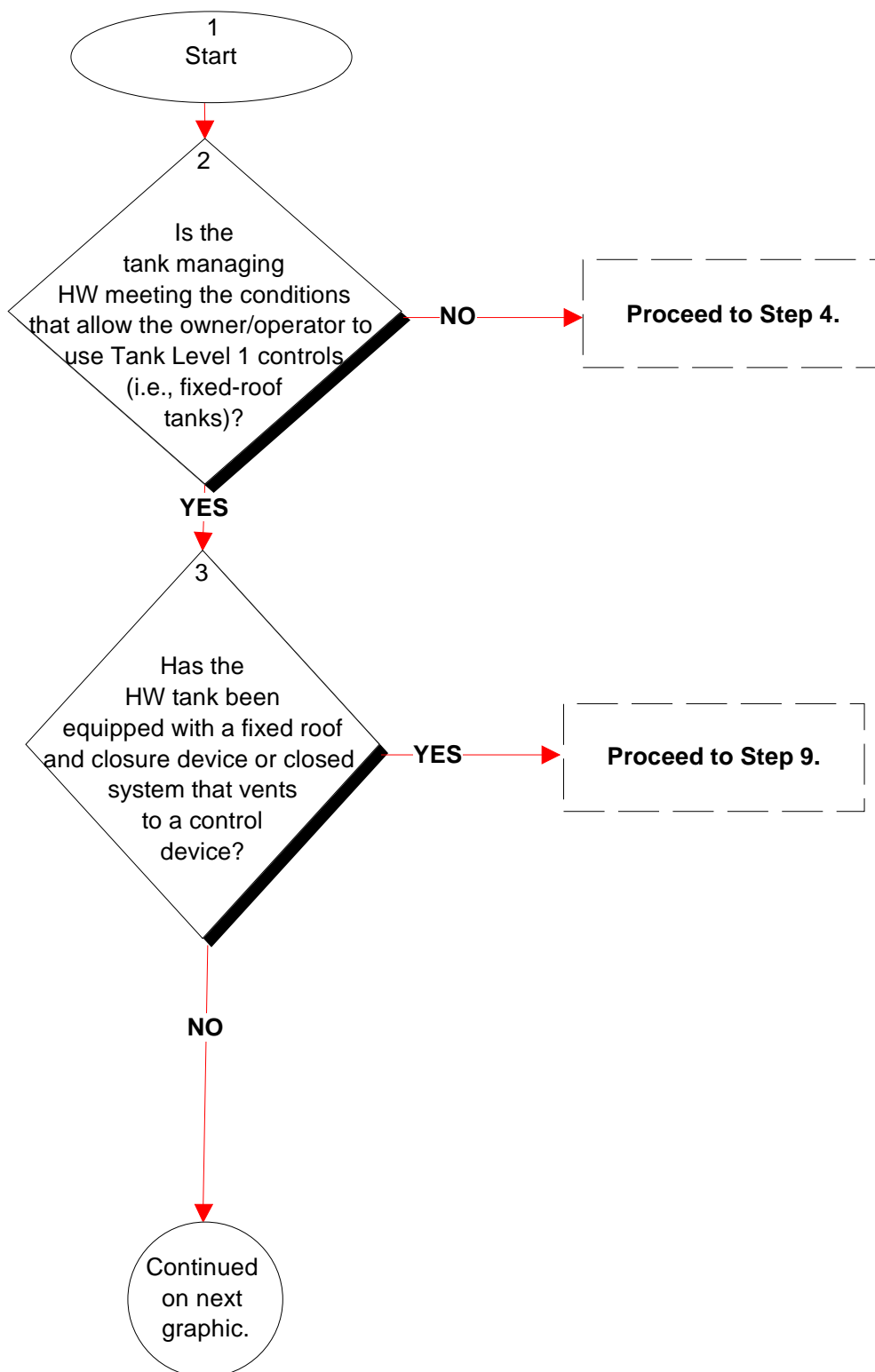
Has the owner/operator determined the applicable control level for the waste?

Before the first time a HW is placed in a tank, the owner/operator must determine whether the tank meets all of the following conditions:

- The tank's maximum organic vapor pressure is less than the tank's design capacity limit;
- hazardous waste in the tank is not heated; and
- the hazardous waste in the tank is not treated using waste stabilization.

An owner/operator whose tank meets all of the following conditions can elect to use either Tank Level 1 or Tank Level 2 controls. For tanks that do not meet all of the above conditions, owners/operators must control air emissions using Tank Level 2 controls.

Figure 5.2: General Organic Air Emission Control Requirements for HW Tanks



Step 1 Start.

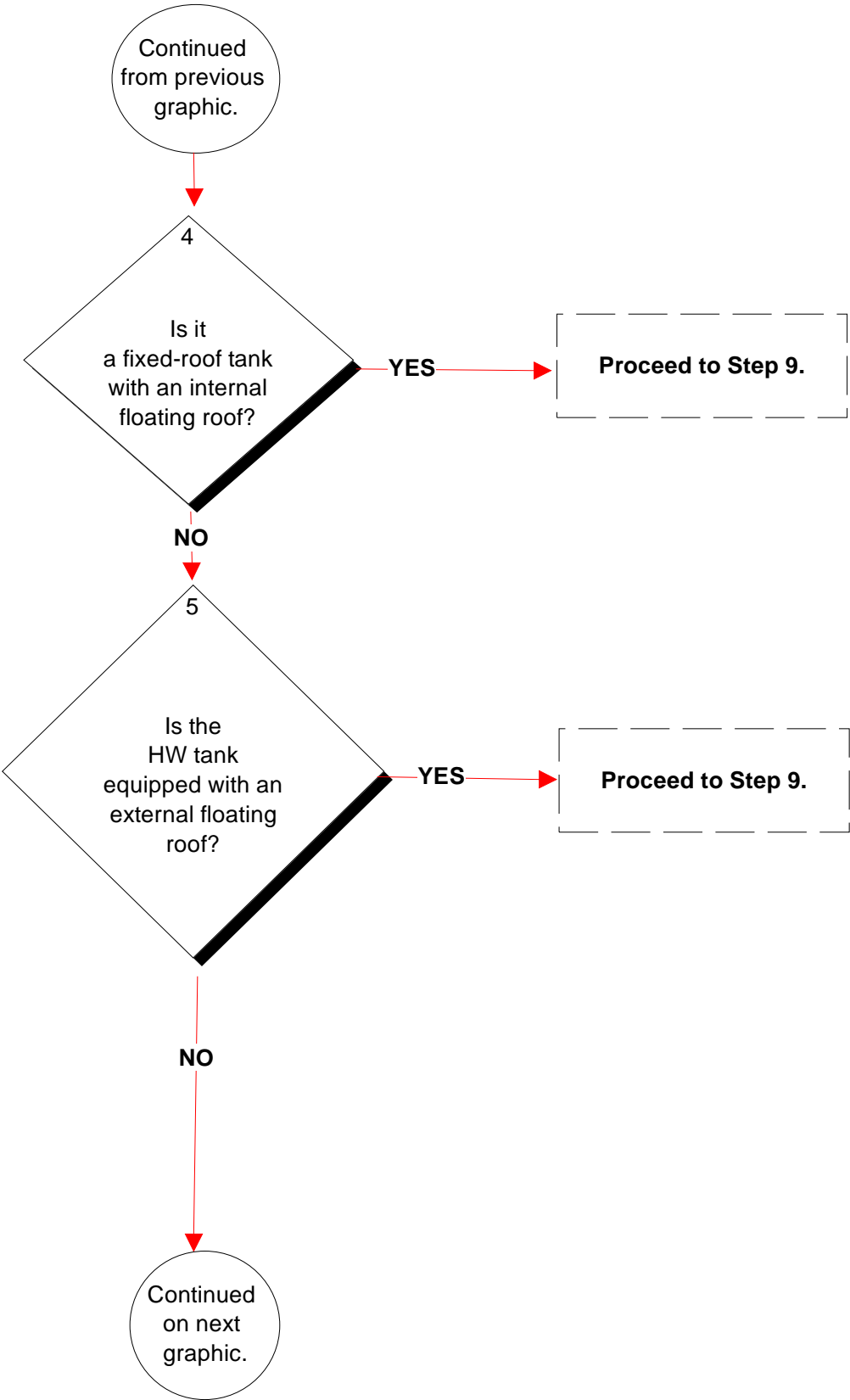
Step 2 The owner/operator may place HW in a tank equipped with Tank Level 1 controls (e.g., a fixed roof) meeting the requirements specified in 40 CFR 264.1084(c) when the HW is determined to meet all of the following conditions:

- The maximum organic vapor pressure (MOVP) of the HW in the tank as determined using the procedure specified in 265.1084(c)(2) through (c)(4) is less than the following applicable value:
 - If the tank design capacity is equal to or greater than 151 m³, then the maximum organic vapor pressure shall be less than 5.2 kPa;
 - If the tank design capacity is equal to or greater than 75 m³ but less than 151 m³, then the maximum organic vapor pressure shall be less than 27.6 kPa; or
 - If the tank design capacity is less than 75 m³, then the maximum organic vapor pressure shall be less than 76.6 kPa;
- The HW in the tank is not heated by the owner/operator to a temperature that is greater than the temperature at which the MOVP of the HW was determined for the purpose of complying with the tank design capacity; and
- The HW in the tank is not treated by the owner or operator using a waste stabilization process, as defined in 40 CFR 265.1081.

Step 3 Tank Level 1 controls require the owner/operator to design, install, operate, and maintain a fixed roof and its closure devices such that they form a continuous barrier over the entire surface of the HW tank. Regardless of whether it is a separate cover installed on the tank or an integral part of the tank structural design, the fixed roof must be installed such that there are no open spaces (e.g., visible cracks, holes, gaps) between roof section joints or between the interface of the roof edge and the tank wall. Each opening in the fixed roof and any associated manifold system shall be (1) equipped with a closure device or (2) connected by a closed-vent system that is vented to a control device.

The *closure device* must be designed to operate such that when it is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device. The *closed-vent system* must vent to a control device that removes or destroys organics in the vent stream whenever there is HW managed in the tank, except venting of the vapor headspace underneath the fixed roof to the control device is not required, opening of closure devices is allowed, and removal of the fixed roof is allowed during periods when it is necessary to provide access to the tank for routine inspection, maintenance, or other activities needed for normal operations, and for removal of accumulated sludge or other residues from the bottom of the tank [40 CFR 264.1084(c)].

Figure 5.2: General Organic Airt Emission Control Requirements for HW Tanks - continued



Step 4

A tank equipped with a fixed-roof tank and an internal floating roof must comply with 40 CFR 264.1084(e) requirements. This section requires that the internal floating roof shall be designed to float on the liquid surface except when it is supported by the leg supports. The internal floating roof shall be equipped with a continuous seal between the wall of the tank and the floating roof edge that meets either of the following:

- A single continuous seal that is either a liquid-mounted seal or a metallic shoe seal, as defined in 40 CFR 265.1081; or
- Two continuous seals mounted one above the other. The lower seal may be a vapor-mounted seal.

The internal floating roof also must meet prescribed specifications such as:

- Each opening in the internal floating roof shall be equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains.
- Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

Finally, owners/operators must ensure certain operational requirements are fulfilled. These include the following types of requirements:

- When the floating roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be completed as soon as practical.
- Prior to filling the tank, each cover, access hatch, gauge float well or lid on any opening in the internal floating roof shall be bolted or fastened closed (i.e., no visible gaps).

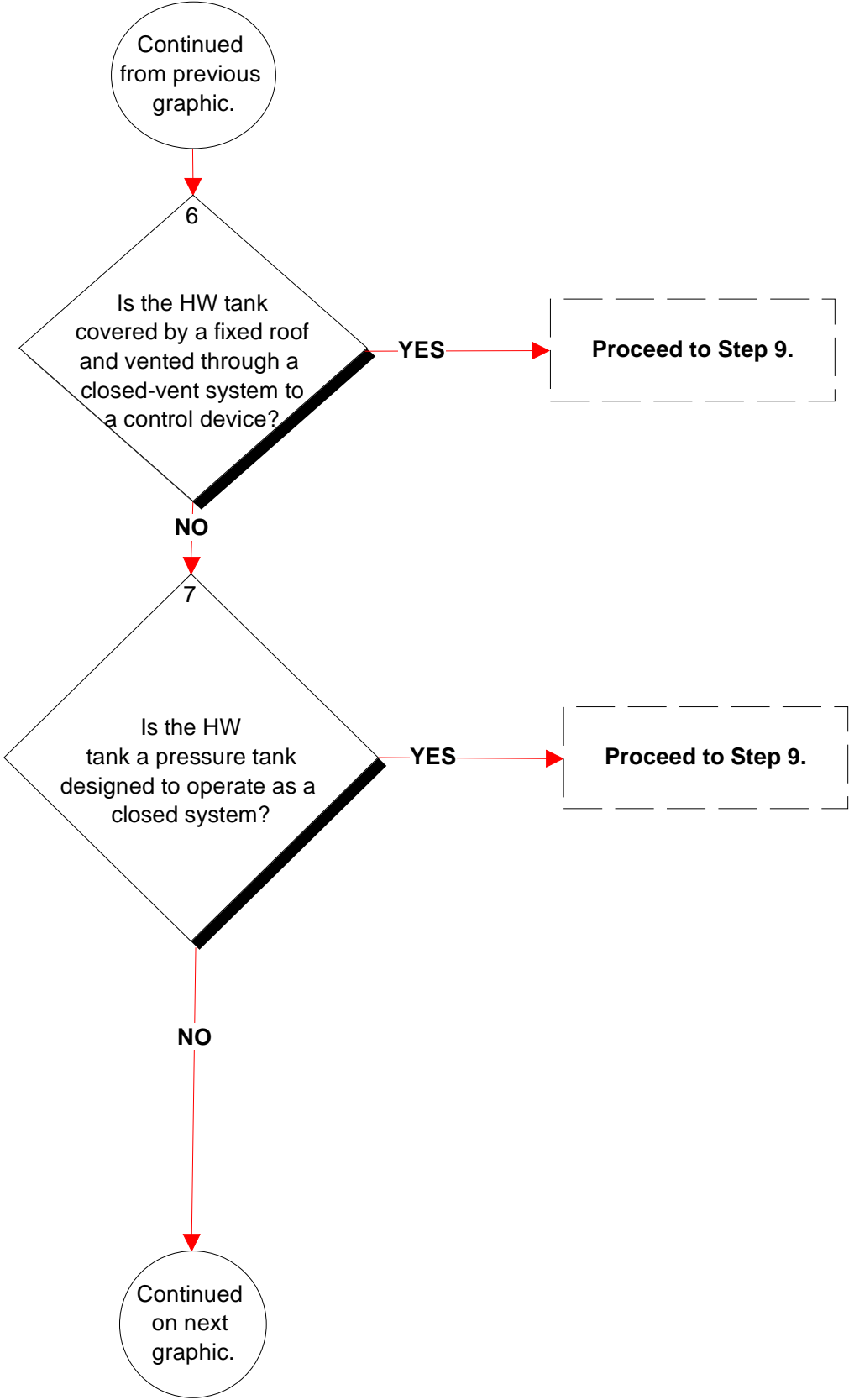
Step 5

Owners/operators can control air pollutant emissions from a HW tank using an external floating roof, provided they meet the requirements specified in 40 CFR 264.1084(f). These provisions require the roof be designed to float on the liquid surface except when it is supported by the leg supports.

An external floating roof requires two continuous seals between the wall of the tank and the roof edge. Lower ("primary") seals can be liquid-mounted seals or metallic shoe seals, as defined in 40 CFR 265.1081. Both the lower and the upper ("secondary") seals, which are mounted above the primary seals and cover the annular space between the floating roof and the wall of the tank, must meet certain parameters regarding the area and width of the gaps between the tank wall and the seals.

The external floating roof components such as automatic bleeder vents (vacuum breaker vents), rim space vents, roof drains, access hatches, gauge hatches, sample wells, gauge float wells, and unslotted and slotted guide pole wells must meet certain specifications (e.g., gasket and slotted membrane fabric covers, seals, lids). Similarly, operational requirements are prescribed and address the primary seal and the secondary seals; the process of filling, emptying, or refilling; and the need that openings and covers in the roof be bolted or fastened in a closed position at all times, except when the closure device must be open for access.

Figure 5.2: General Organic Airt Emission Control Requirements for HW Tanks - continued

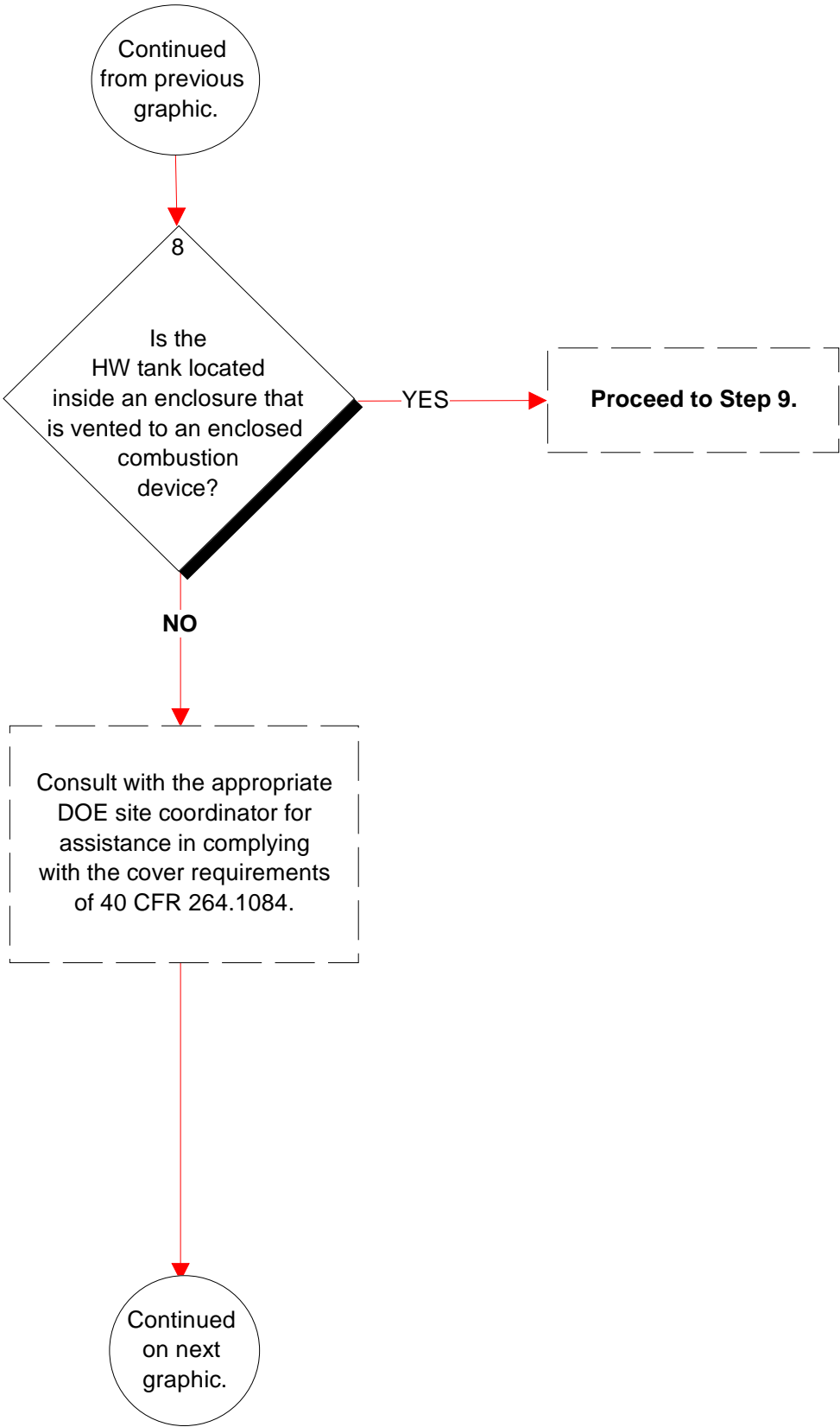


- Step 6** Owners/operators that control air pollutant emissions from a HW tank by venting the tank to a control device shall meet the requirements specified in 40 CFR 264.1084(g). These require that the tank be covered by a fixed roof and vented directly through a closed-vent system to a control device in accordance with the following requirements:
- The fixed roof and its closure devices shall be designed to form a continuous barrier over the entire surface area of the liquid in the tank.
 - Each opening in the fixed roof not vented to the control device shall be equipped with a closure device. If the pressure in the vapor headspace underneath the fixed roof is *less than* atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is *equal to or greater than* atmospheric pressure when the control device is operating, the closure device must be designed to operate with no detectable organic emissions.
 - The fixed roof and its closure devices shall be made of suitable materials that minimize exposure of the HW to the atmosphere, to the extent practical, and maintain the integrity of the fixed roof and closure devices throughout their intended service life. Factors to be considered when selecting the materials for and designing the fixed roof and closure devices include:
 - organic vapor permeability, the effects of any contact with the liquid and its vapor managed in the tank;
 - the effects of outdoor exposure to wind, moisture, and sunlight; and
 - the operating practices used for the tank on which the fixed roof is installed.
 - The closed-vent system and control device shall be designed and operated as discussed in Module 5C

Whenever a HW is in the tank, the fixed roof shall be installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof vented to the control device except (1) to provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations, or (2) to remove accumulated sludge or other residues from the bottom of a tank. Opening of a safety device, as defined in 40 CFR 265.1081, is allowed at any time conditions require doing so to avoid an unsafe condition.

- Step 7** A pressure tank shall be designed to operate as a closed system with "no detectable organic emissions" [determined in accordance with 40 CFR 264.1083(d)] at all times that HW is in the tank except when opening a safety device to avoid an unsafe condition (see Step 10 of this module) and when purging inerts from the tank, provided the purge stream is routed to a closed-vent system and control device. The HW tank must not vent to the atmosphere as a result of compression of the vapor headspace in the tank during filling of the tank to its design capacity and, therefore, all tank openings must be equipped with closure devices designed to operate with no detectable organic emissions.

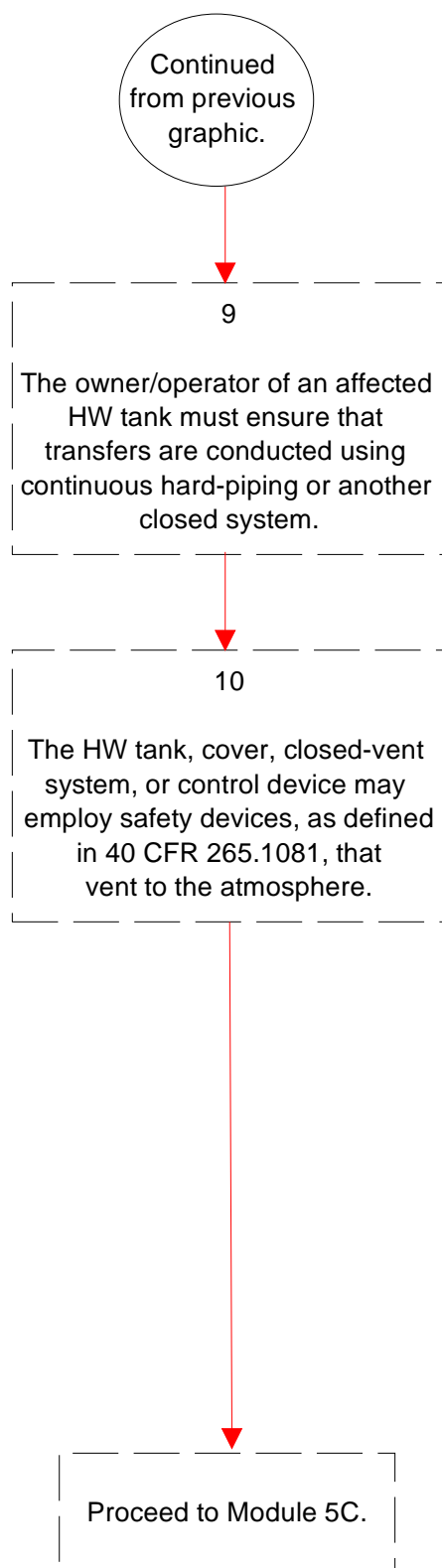
Figure 5.2: General Organic Air Emission Control Requirements for HW Tanks - continued



Step 8 The HW tank must be located in an enclosure that is vented through a closed-vent system to an enclosed combustion control device that is designed and operated in accordance with the standards for either a vapor incinerator, boiler, or process heater, as specified for closed-vent systems and control devices (Chapter 5, Module C).

- The enclosure must be designed and operated in accordance with the criteria for a permanent total enclosure as specified in “Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure” under 40 CFR 52.741, appendix B.
- The owner or operator shall perform the verification procedure for the enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" under 40 CFR 52.741, appendix B ("Criteria T") initially when the enclosure is first installed and, thereafter, annually.
- Safety devices (as defined in Sec. 265.1081) may be installed and operated as necessary on any enclosure, closed-vent system, or control device.
- The owner or operator must inspect and monitor it as a closed-vent system and control device

Enclosure may have permanent or temporary openings to allow worker access; passage of material into or out of the enclosure by conveyor, vehicles, or other mechanical means; entry of permanent mechanical or electrical equipment; or direct airflow into the enclosure. For purposes of Criteria T, evaluations of permanent or temporary openings must be conducted on the enclosure as it is operated during hazardous waste management operations. Therefore, if the enclosure has a door that is closed during waste operations, then the open doorway would not be considered a natural draft openings (NDOs) under Criteria T; however, cracks or openings that exist around the door when it is closed would be considered NDO. Accordingly, any enclosure door (and other openings not accounted for as Criteria T NDO) must be closed at all times that hazardous waste is managed in the enclosed tank (unless the tank is exempt from Subpart CC air emission control requirements or when it is necessary to open the door or opening for waste transfer, equipment access, or worker access).



Step 9 The owner and operator shall ensure that transfers of affected HW (i.e., HW with an average VO concentration of equal to or greater than 500 ppmw) from another tank subject to Subpart CC or from a surface impoundment subject to 40 CFR 264.1085/265.1086 are conducted using continuous hard-piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. EPA considers a drain system that meets the requirements of 40 CFR part 63, Subpart RR (National Emission Standards for Individual Drain Systems) to be a "closed system." See Appendix F for these requirements.

Transfer requirements do not apply to those HWs that meet the conditions specified in 40 CFR 264.1082(c)/265.1083(c) (as previously described in Module 5A) including:

- HW that meets the average VO concentration conditions at the point of waste origination;
- HW that has been treated by an organic destruction or removal process; or
- HW that meets all applicable numerical or technology-based LDR treatment standards.

Also, transfers of HW between tanks and containers are not required to be accomplished in a closed system.

Step 10 One or more safety devices (e.g., pressure relief valves, frangible discs, fusible plugs) which vent directly to the atmosphere may be used on the tank, cover, closed-vent system, or control device provided the safety device meets the following conditions:

- The safety device is not used for routine venting of gases or vapors from the vapor headspace underneath a cover such as during filling of the unit or to adjust the pressure in this vapor headspace in response to normal daily diurnal ambient temperature fluctuations; and
- The safety device remains in a closed, sealed position at all times except when (1) the internal pressure or a relevant parameter exceeds the device threshold setting applicable to the air emission control equipment as determined by the owner or operator based on manufacturer recommendations, applicable regulations, fire protection and prevention codes, standard engineering codes and practices, or other requirements for the safe handling of flammable, ignitable, explosive, reactive, or hazardous materials; or (2) unsafe conditions resulting from an unplanned, accidental, or emergency event require that the device open for the purpose of preventing physical damage or permanent deformation of the unit or its air emission control equipment. An example of an unplanned event is a sudden power outage.

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5.4 Module C: Requirements for Closed-vent Systems and Control Devices

5.4.1 Introduction

Closed-vent systems are those systems which are not open to the atmosphere and that are composed of piping, connections, and if necessary, flow inducing devices that transport vapor or gas from a piece or pieces of equipment to a control device.

To comply with the requirements of Subpart CC, a control device shall be one of the following:

- A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95% by weight; or
- An enclosed combustion device designed and operated in accordance with the requirements of 40 CFR 264.1033(c); or
- A flare designed and operated in accordance with the requirements of 40 CFR 264.1033(d).
- A control device operated and maintained in compliance with 40 CFR 264.1033(j).

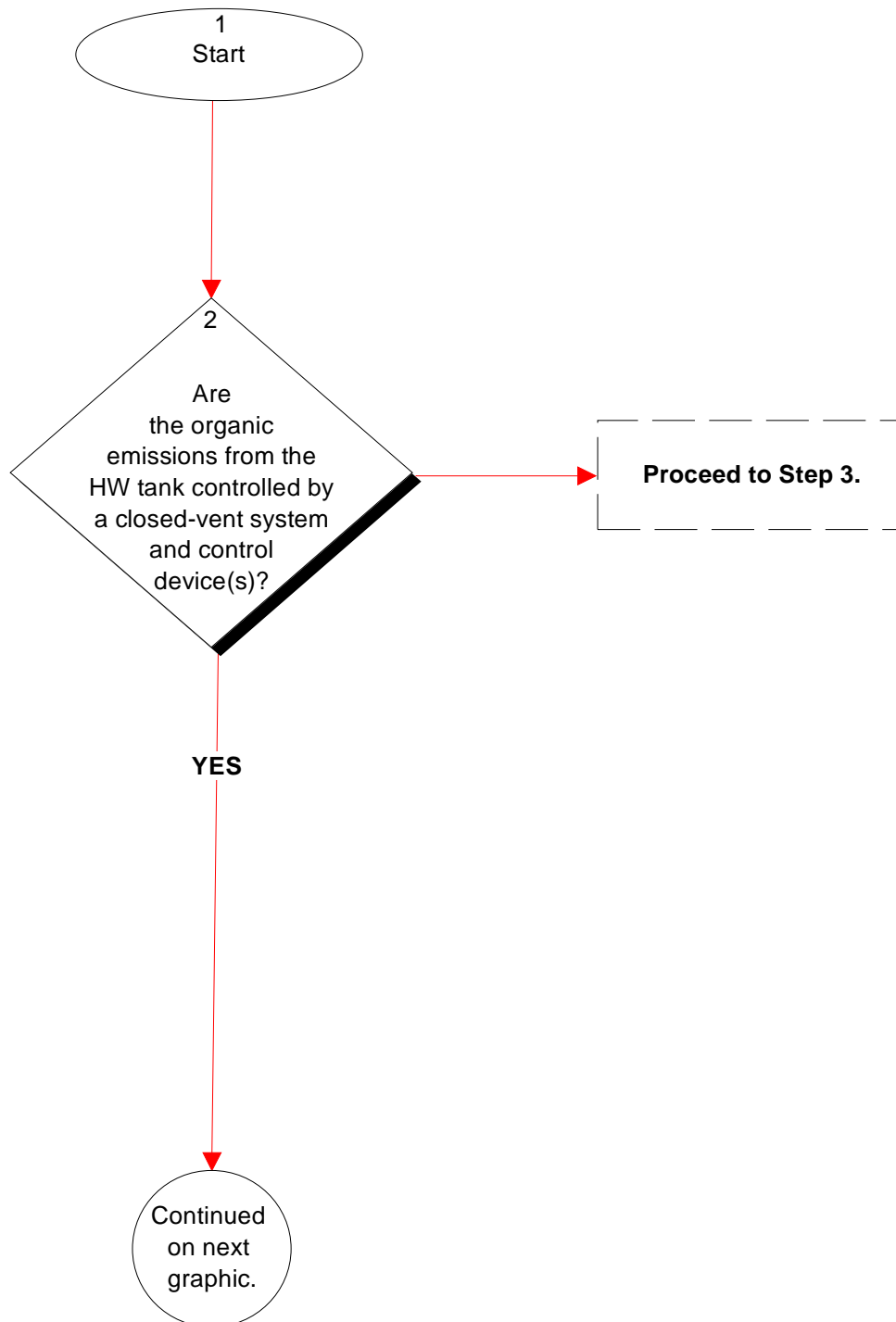
The control device must be operating at all times when gases, vapors, and/or fumes are vented from the HW management unit through the closed-vent system to the control device. The owner/operator must ensure gases, vapors, and/or fumes are not actively vented to the control device during periods of planned routine maintenance (limited to 240 hours per year) or system malfunction (i.e., periods when the control device is not operating or not operating normally) except in cases when it is necessary to vent the gases, vapors, or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned maintenance actions.

5.4.2 Milestones

Has the owner/operator chosen to use a control device other than one described in 40 CFR 264.1087(c)(1)?

- An owner/operator may use a device other than a flare, thermal vapor incinerator, boiler, process heater, condenser, or carbon adsorption system if the device is operated in accordance with 40 CFR 264.1033(j).

Figure 5.3: Requirements for Closed-vent Systems and Control Devices



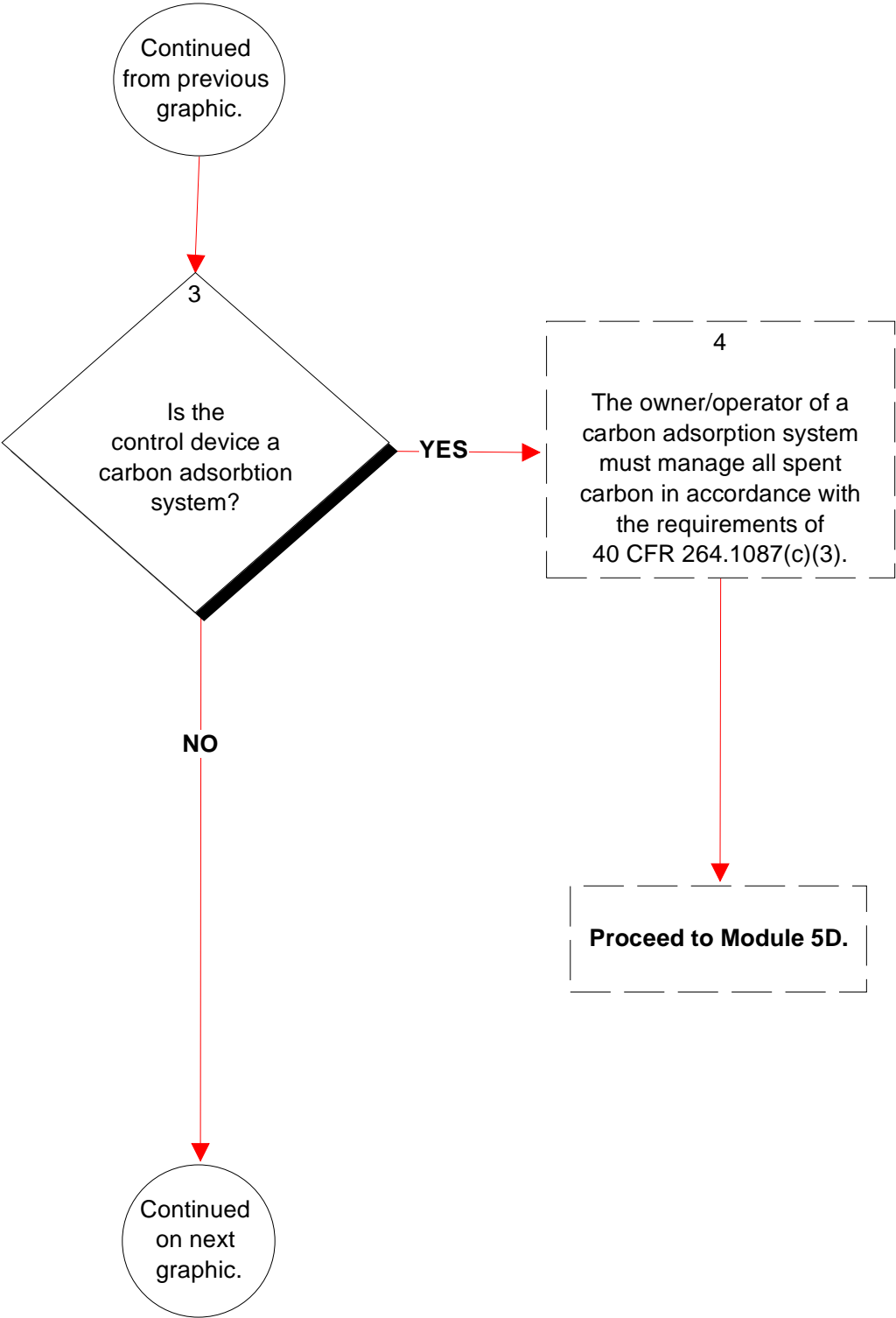
Step 1 Start.**Step 2** The closed-vent system shall meet the following requirements:

- The closed-vent system shall route the gases, vapors, and fumes emitted from the HW in the tank to a control device;
- The closed-vent system shall be designed and operated in accordance with the requirements specified in 40 CFR 264.1033(k); and
- If the closed-vent system contains one or more bypass devices that could be used to divert all or a portion of the gases, vapors, and/or fumes and prevent their entering the control device, the owner/operator shall meet the following requirements:
 - For each bypass device which, for the purposes of this regulation, does not include low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, spring loaded pressure relief valves, and other safety device fittings, the owner/operator shall either:
 - (a) Install, calibrate, maintain, and operate a flow indicator (i.e., a device which indicates the presence of either gas or vapor flow in the bypass line) at the inlet to the bypass line used to divert gases and vapors from the closed-vent system to the atmosphere at a point upstream of the control device inlet; or
 - (b) Secure the bypass device control mechanism (e.g., valve handle, damper lever) in the closed position using a seal or locking device (e.g., car-seal; lock-and-key configuration valve) such that the bypass device cannot be opened without breaking the seal or removing the lock. Seals or closure mechanisms must shall be visually inspect at least once every month to verify that the valve is maintained in the closed position; and
 - The control device shall be one of the following devices:
 - (a) A control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent by weight;
 - (b) An enclosed combustion device designed and operated in accordance with the requirements of 40 CFR 264.1033(c); or
 - (c) A flare designed and operated in accordance with the requirements of 40 CFR 264.1033(d).
 - (d) A control device other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system provided it is operated and maintained in accordance with the requirements of 40 CFR 264.1033(j).

The control device must be operating at all times when gases, vapors, and/or fumes are vented from the HW management unit through the closed-vent system to the control device except in cases when it is necessary to vent the gases, vapors, or fumes to avoid an unsafe condition or to implement malfunction corrective actions or planned routine maintenance actions (limited to 240 hours per year).

[40 CFR 264.1087(c)(1), (2), & (4)]

Figure 5.3: Requirements for Closed-vent Systems and Control Devices - continued



Step 3 A carbon adsorption system is a control device that uses activated carbon to adsorb volatile organic compounds (VOCs) from a gas stream. Captured VOCs are later recovered from the carbon.

Step 4 The owner/operator using a carbon adsorption system to reduce the total organic content of the inlet vapor stream vented to the carbon adsorption system by at least 95% by weight shall operate and maintain the control device in accordance with the following requirements:

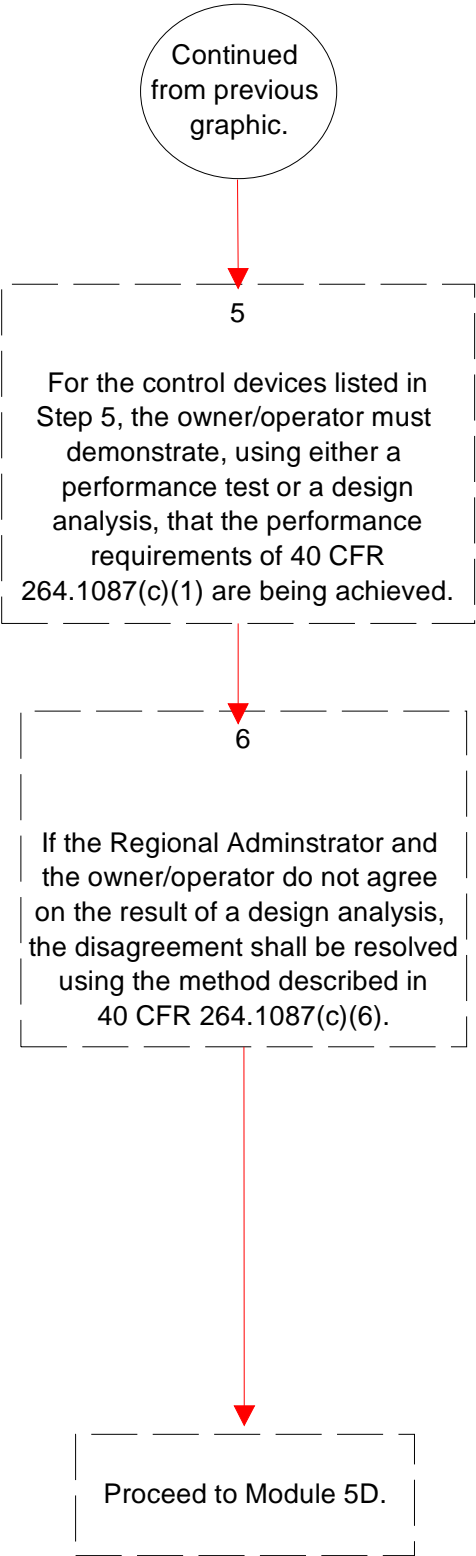
- Following the initial startup of the control device, all activated carbon in the control device shall be replaced with fresh carbon on a regular basis in accordance with the requirements of 40 CFR 264.1033(g) or 40 CFR 264.1033(h); and
- All carbon that is a HW and is removed from the control device, regardless of the average VO concentration of the carbon, shall be managed in accordance with the requirements of 40 CFR 264.1033(n).

[40 CFR 264.1087(c)(3)]

The owner/operator shall also demonstrate that a carbon adsorption system achieves 95% by weight reduction of the total organic content based on the total quantity of organics vented to the atmosphere from all carbon adsorption system equipment that is used for organic adsorption, organic desorption or carbon regeneration, organic recovery, or carbon disposal.

[40 CFR 264.1087(c)(5)(v)]

Figure 5.3: Requirements for Closed-vent Systems and Control Devices - continued



Step 5 An owner/operator must conduct either a performance test or a design analysis for all control devices, except for the following:

- A flare;
- A boiler or process heater with a design heat input capacity of 44 megawatts or greater;
- A boiler or process heater into which the vent stream is introduced with the primary fuel;
- A boiler or industrial furnace burning HW for which the owner/operator has been issued a final permit under 40 CFR Part 270 and designed and operates the unit in accordance with the requirements of 40 CFR Part 266, Subpart H (Hazardous Waste Burned in Boilers and Industrial Furnaces); or
- A boiler or industrial furnace burning HW for which the owner/operator has designed and operates in accordance with the interim status requirements of 40 CFR Part 266, Subpart H.

An owner/operator shall demonstrate the performance of each flare in accordance with the requirements specified in 40 CFR 264.1033(e). Performance tests on any control device not mentioned above shall be conducted using the test methods and procedures specified in 40 CFR 264.1034(c)(1) through (c)(4).

For a design analysis conducted on any control device not listed above the design analysis shall meet the requirements specified in 40 CFR 264.1035(b)(4)(iii).

Step 6 If the owner/operator and the Regional Administrator do not agree on a demonstration of control device performance using a design analysis, then the disagreement shall be resolved using the results of a performance test performed by the owner/operator in accordance with the requirements of 40 CFR 264.1034 (c)(1) through (c)(4). The Regional Administrator may choose to have an authorized representative observe the performance test.

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5.5 Module D: Inspection and Monitoring Requirements

5.5.1 Introduction

Under Subpart CC, owners or operators must develop and implement a written plan and schedule to inspect and monitor HW tank air emission control equipment. This plan and schedule must be incorporated into the facility inspection plan required under 40 CFR 264.15, which requires that inspection results be recorded in an inspection log or summary that is maintained for three years from the date of inspection.

Both HW Tank Level 1 and Tank Level 2 air emission control equipment, including closed-vent systems and control devices, must be inspected by the owner or operator to check for defects that could result in air pollutant emissions [40 CFR 264.1088(a)]. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. Inspection procedures may be tank/control-specific. In some cases (e.g., internal floating roof components), owners/operators are required to notify the regulators in advance of each inspection to provide them with the opportunity to have an observer present during the inspection.

Generally, initial inspections should be performed on or before the date that the HW tank is scheduled to receive HW that subjects it to Subpart CC requirements. Thereafter, inspections should be performed at least once every year unless (1) the owner/operator has designated a cover as an "unsafe to inspect and monitor cover" and inspects the unit as frequently as practicable, or (2) a tank is buried partially or entirely underground. Defects detected during an inspection must be repaired as soon as possible, but no later than 45 calendar days after detection.

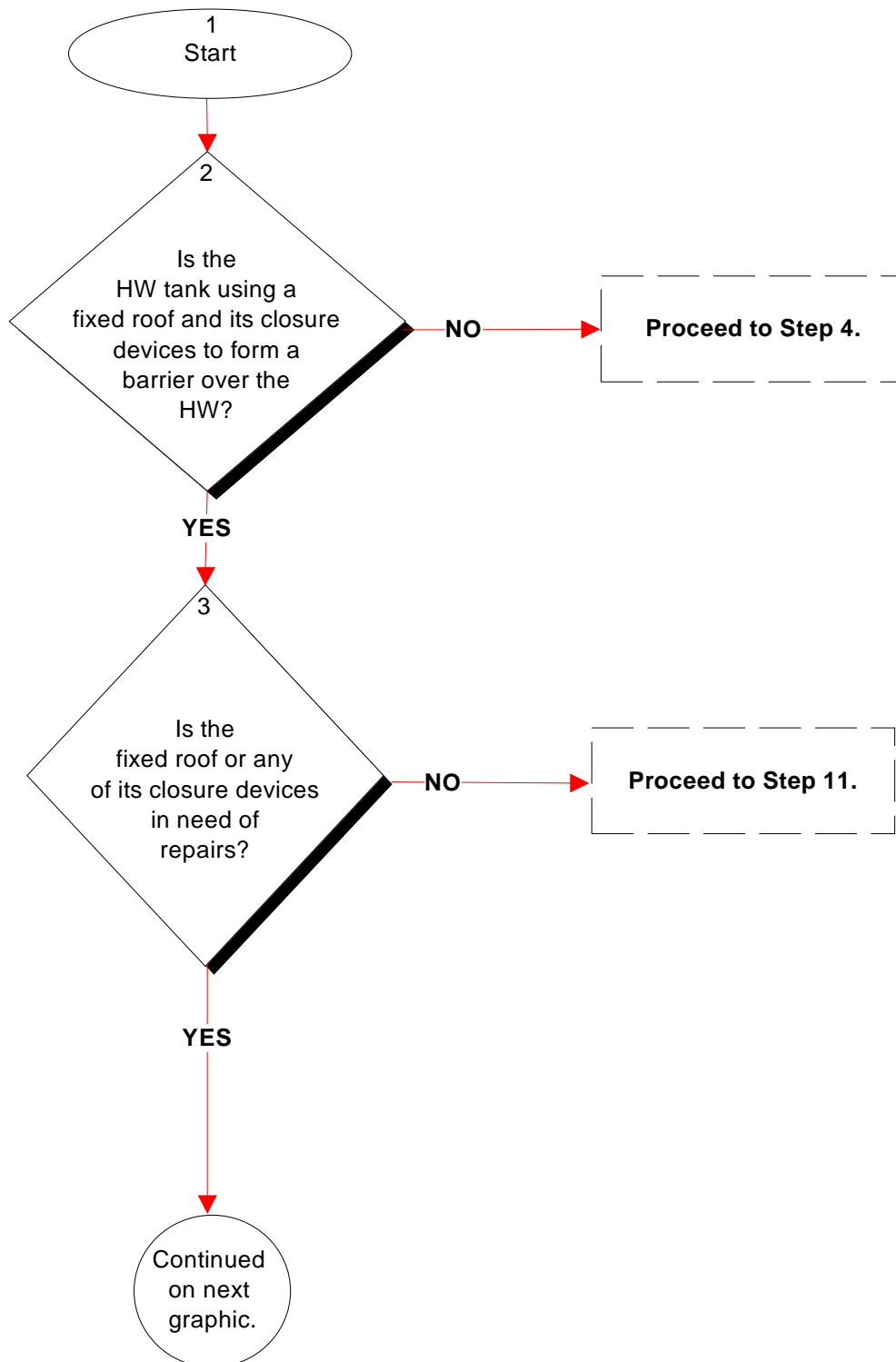
5.5.2 Milestones

Has the owner/operator developed/implemented a written inspection program for all affected HW tank covers and closure devices?

All regulated HW tank covers and closure devices must be monitored and inspected to ensure they are maintained in a closed position unless:

- Performing routine inspection, maintenance, or other activities needed for normal operations (e.g., open a port to sample the liquid in the tank);
- Removing accumulated sludge or other residues from the tank bottom;
- Opening of a some type of pressure relief device (e.g., conservation vent); or
- Opening of a "safety device" to avoid an unsafe condition.

Figure 5.4: Inspection and Monitoring Requirements



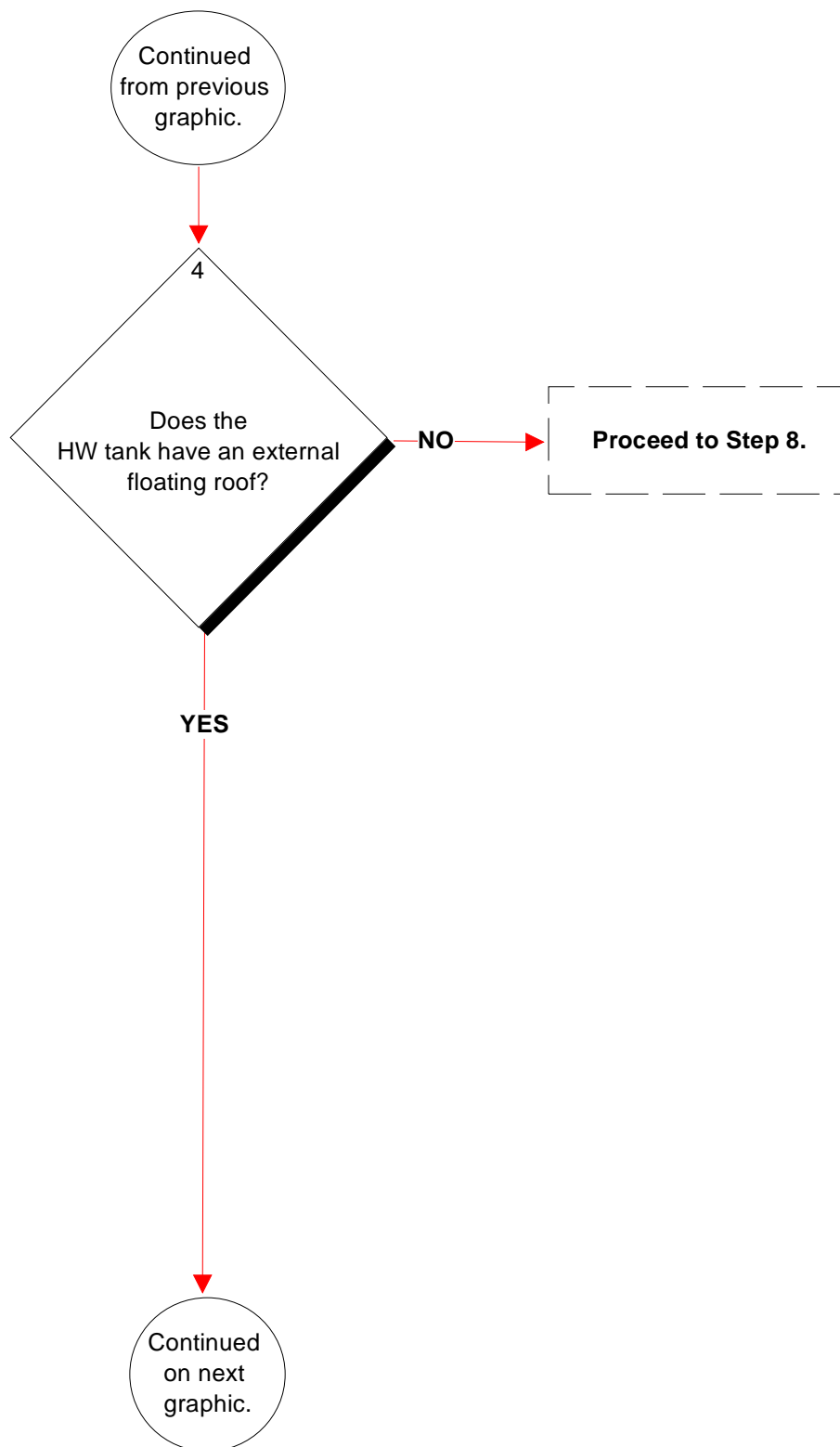
Step 1 Start.

Step 2 Owners/operators of HW tanks that are (1) used to manage HW meeting the design capacity/maximum organic vapor pressure (MOVP) conditions [Module 5.B, Step 2], (2) not heating the HW, and (3) not being used for waste stabilization processes can choose to control organic air emissions using either Tank Level 1 or Tank Level 2 controls. Determining the MOVP for HWs to be managed using Tank Level 1 controls, however, must occur before the first time the HW is placed in the tank and, thereafter, whenever changes to the HW could potentially cause the MOVP to increase to a level that equals or exceeds tank design capacity category limit.
[40 CFR 264.1084(c)(1)]

To comply with Tank Level 1 conditions, owners/operators can use a fixed roof and closure devices form a continuous barrier over the entire surface area of the HW in the tank. On or before the date that the tank begins managing affected HW (i.e., becomes subject to Subpart CC) and annually thereafter, owners/operators using Tank Level 1 controls shall visually inspect the fixed roof and its closure devices to check for defects that could result in air pollutant emissions. Defects include, but are not limited to, visible cracks, holes, or gaps in the roof sections or between the roof and the tank wall; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. Subsequent inspections shall be performed at least once every year except under the special conditions discussed in Steps 11 and 12. The owner/operator shall maintain a record of the inspection as described Chapter 5, Module E.
[40 CFR 264.1084(c)(4)]

Step 3 In the event that a defect is detected, the owner or operator shall repair each defect detected during an inspection as follows:

- The owner or operator shall make first efforts at repair of the defect no later than 5 calendar days after detection, and repair shall be completed as soon as possible but no later than 45 calendar days after detection.
- Repair of a defect may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.



Step 4 After installation, the owner/operator of a tank with an external floating roof shall visually inspect the external floating roof and its closure devices to check for defects that could result in air pollutant emissions. Defects include, but are not limited to: Holes, tears, or other openings in the rim seal or seal fabric of the floating roof; a rim seal detached from the floating roof; all or a portion of the floating roof deck being submerged below the surface of the liquid in the tank; broken, cracked, or otherwise damaged seals or gaskets on closure devices; and broken or missing hatches, access covers, caps, or other closure devices. The owner or operator shall perform an initial inspection of the external floating roof and its closure devices on or before the date that the tank becomes subject to Subpart CC provisions. Thereafter, the owner or operator shall perform the inspections at least once every year except for the special conditions provided for in Steps 11 and 12.

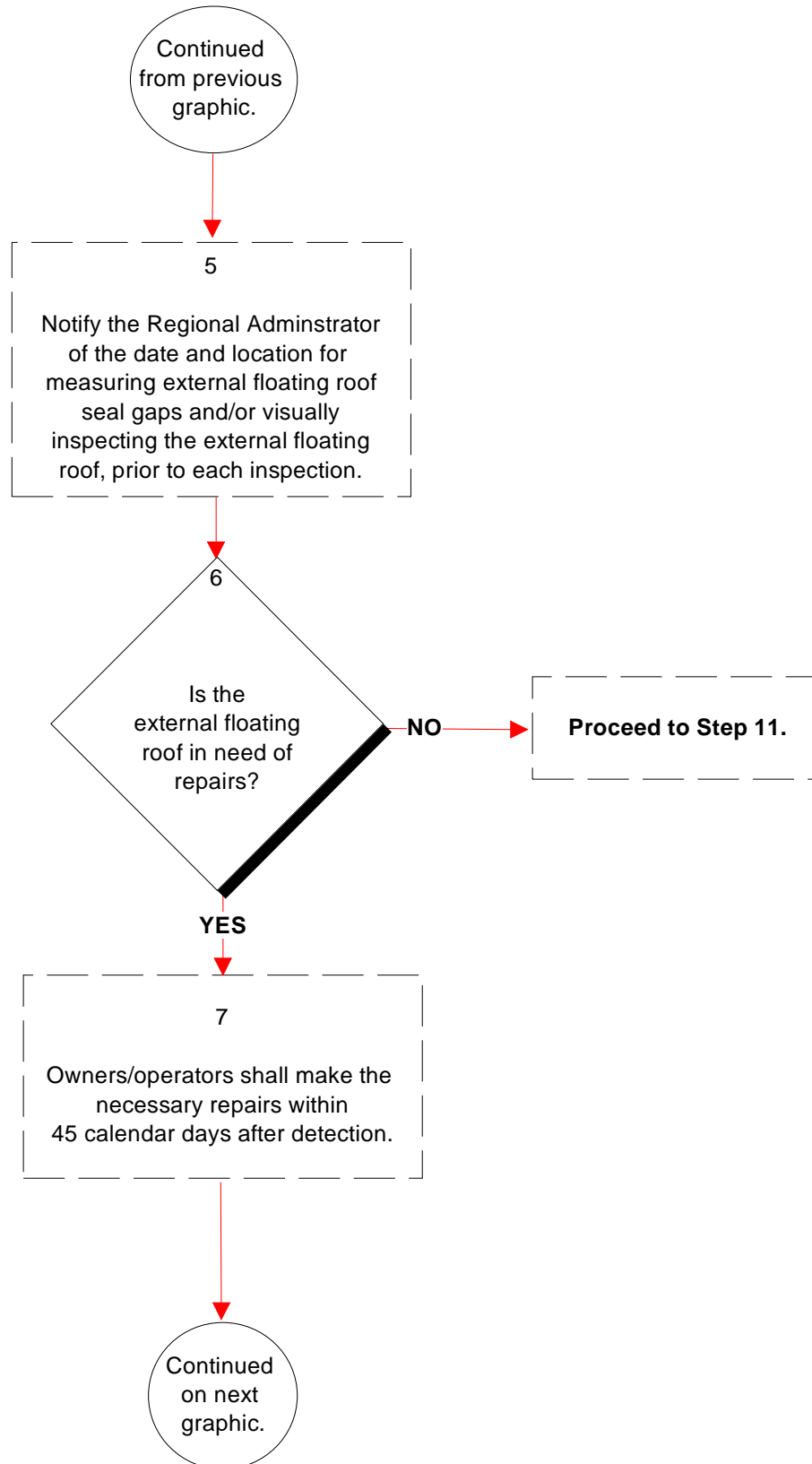
The owner or operator shall measure gaps between the tank wall and the primary seal within 60 calendar days after initial operation of the tank following installation of the floating roof and, thereafter, at least once every 5 years. Gaps between the tank wall and the secondary seal shall likewise be measured within 60 calendar days after initial operation and, thereafter, at least once every year. [NOTE: If a tank ceases to hold hazardous waste for a period of 1 year or more, subsequent introduction of hazardous waste into the tank shall be considered an initial operation for the purposes of these paragraphs]. Total surface area of gaps in the primary seal and in the secondary seal shall be determined individually using the following procedure:

- The seal gap measurements shall be performed at one or more floating roof levels when the roof is floating off the roof supports.
- Seal gaps, if any, shall be measured around the entire perimeter of the floating roof in each place where a 0.32-centimeter (cm) diameter uniform probe passes freely (without forcing or binding against the seal) between the seal and the wall of the tank and measure the circumferential distance of each such location.

The gap surface area shall be determined using probes of various widths to measure accurately the actual distance from the tank wall to the seal and multiplying each such width by its respective circumferential distance. The total gap area shall be calculated by adding the gap surface areas determined for each identified gap location for the primary seal and the secondary seal individually, and then dividing the sum for each seal type by the nominal diameter of the tank. These total gap areas for the primary seal and secondary seal are then compared to the respective standards for the seal type.

[40 CFR 264.1084(f)(3)]

Figure 5.4: Inspection and Monitoring Requirements - continued



Step 5 The owner or operator shall notify the Regional Administrator in advance of each inspection required by Step 4 to afford the Regional Administrator the opportunity to have an observer present during the inspection. The owner or operator shall notify the Regional Administrator of the date and location of the inspection as follows:

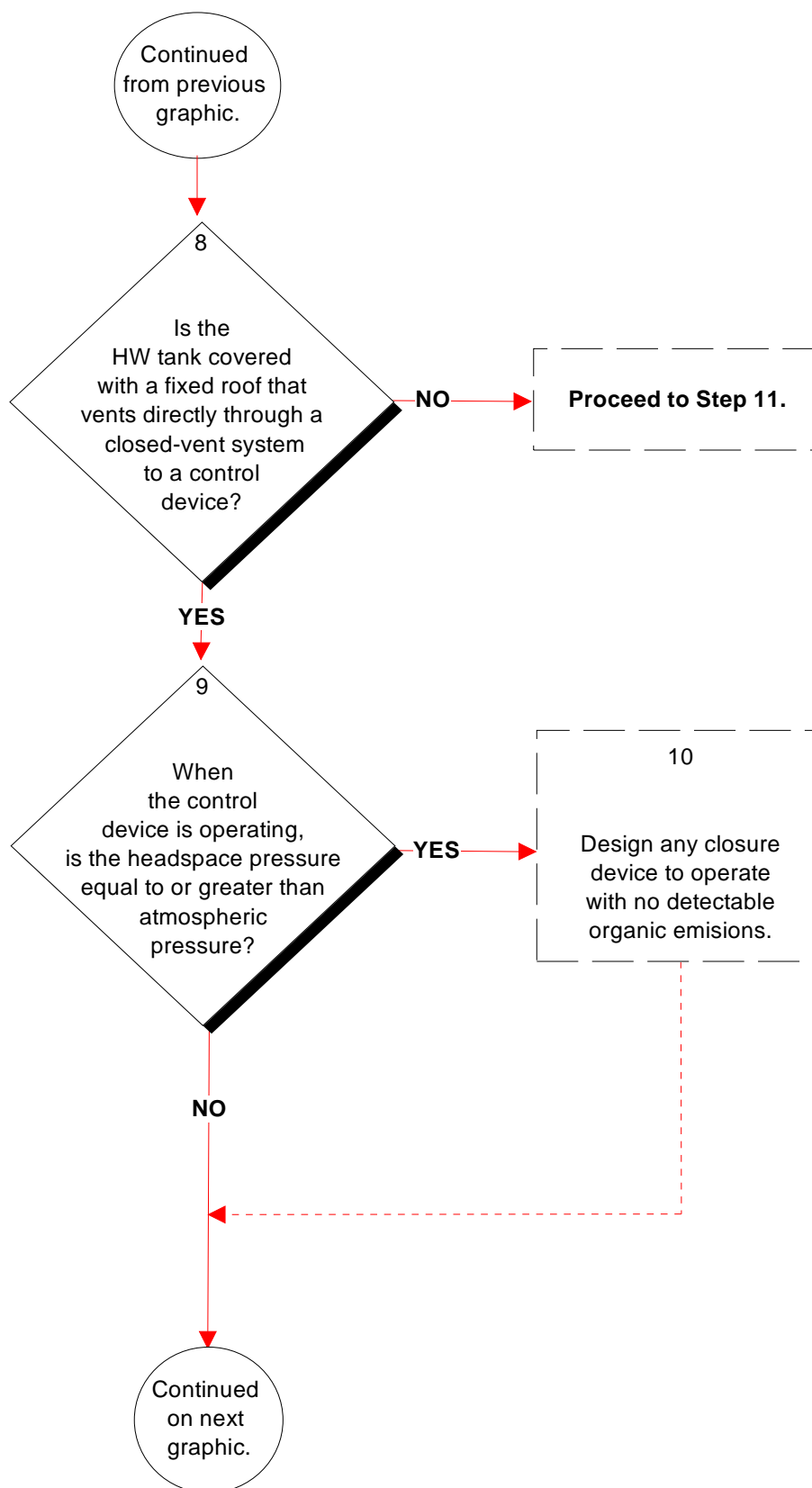
- Prior to each inspection to measure external floating roof seal, written notification shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before the date the measurements are scheduled to be performed.
- Prior to each visual inspection of an external floating roof in a tank that has been emptied and degassed, written notification shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before refilling the tank, unless an inspection is not planned.

When a visual inspection is not planned and the owner or operator could not have known about the inspection 30 calendar days before refilling the tank, the owner or operator shall notify the Regional Administrator as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Regional Administrator at least 7 calendar days before refilling the tank. [40 CFR 264.1084(f)(3)(iii)]

Step 6 The owner or operator shall make first efforts at the necessary repairs no later than 5 calendar days after detection if any inspection identifies a defect or if seal gap measurements indicate that total gap areas do not conform to the following specifications:

- The total area of the gaps between the tank wall and the primary liquid-mounted or metallic shoe seal shall not exceed 212 square centimeters (cm²) per meter of tank diameter, and the width of any portion of any gap shall not exceed 3.8 cm. For metallic shoe seals, one end shall extend into the liquid in the tank and the other end shall extend a vertical distance of at least 61 cm above the liquid surface; and
- The secondary seal shall be mounted above the primary seal and cover the annular space between the floating roof and the wall of the tank such that the total area of the gaps between the tank wall and the secondary seal shall not exceed 21.2 cm² per meter of tank diameter, and the width of any portion of these gaps shall not exceed 1.3 cm.

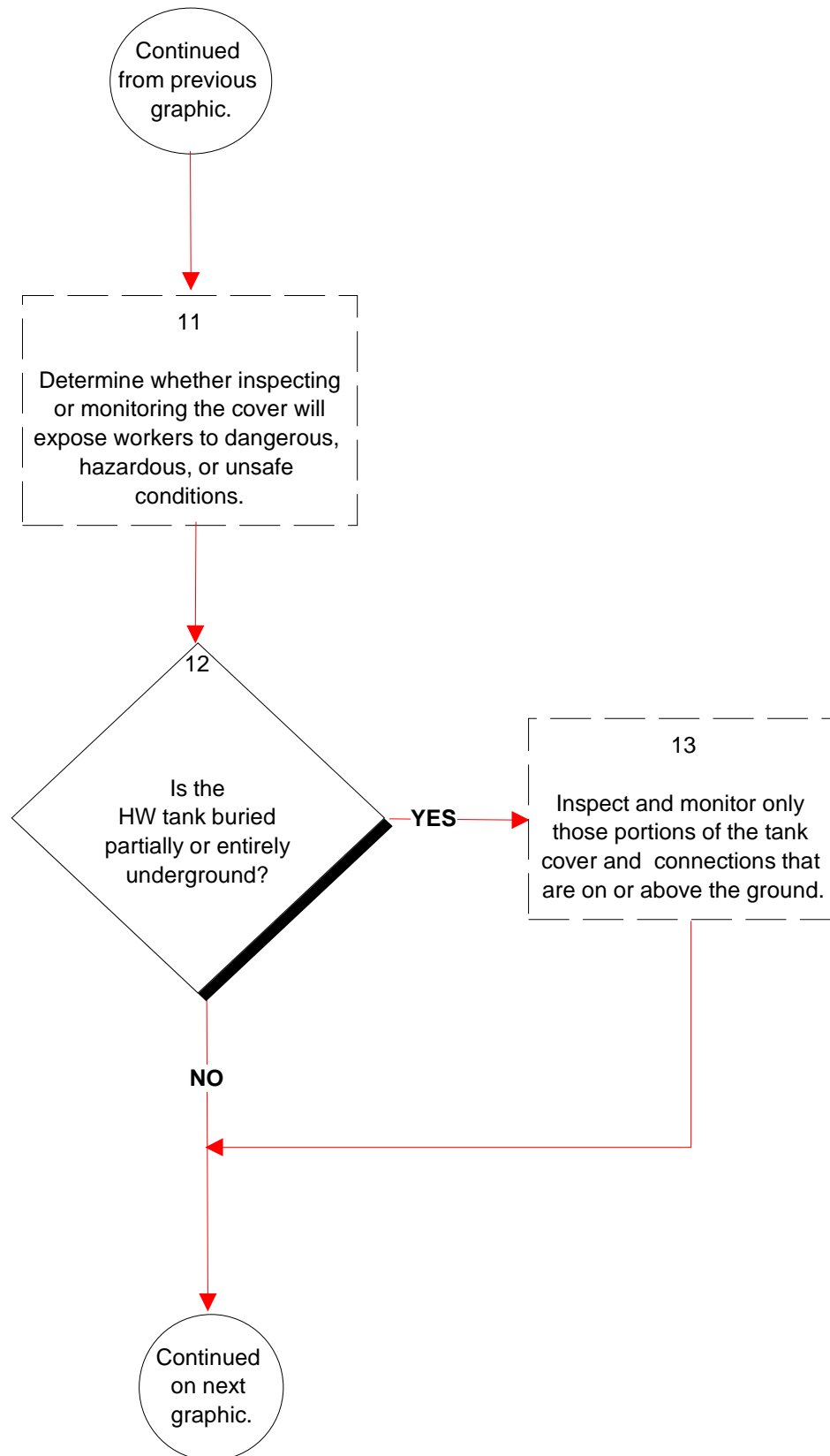
Step 7 The owner or operator shall make repairs as soon as possible, but no later than 45 calendar days after detecting a failure, defect, or nonconforming gap area during inspections required in Step 4. Repair of a defect or failure may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation. [40 CFR 264.1084(k)(2)]



Step 8 Owners or operators shall perform an initial inspection of the air emission control equipment on or before the date that the tank becomes subject to Subpart CC. Thereafter, inspections shall be performed at least once every year except for the special conditions provided for in Steps 11 and 12. Visual inspections of the fixed roof tank and its closure devices shall check for defects that could result in air pollutant emissions and shall be conducted as described in Step 2 of this module. Furthermore, owners/operators of tanks that are covered by a fixed roof and who control air pollutant emissions by venting directly through a closed-vent system to a closure device must inspect and monitor the closed-vent system and control device as specified in Steps 15 -18.

Step 9 If the pressure in the vapor headspace underneath the fixed roof is less than atmospheric pressure when the control device is operating, the closure devices shall be designed to operate such that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the cover opening and the closure device. If the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, the closure device shall be designed to operate with no detectable organic emissions.

Step 10 When the pressure in the vapor headspace underneath the fixed roof is equal to or greater than atmospheric pressure when the control device is operating, owners/operators will need to test each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices to ensure that the tank is designed and operates with no detectable emissions. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve. [Also see Step 24.]



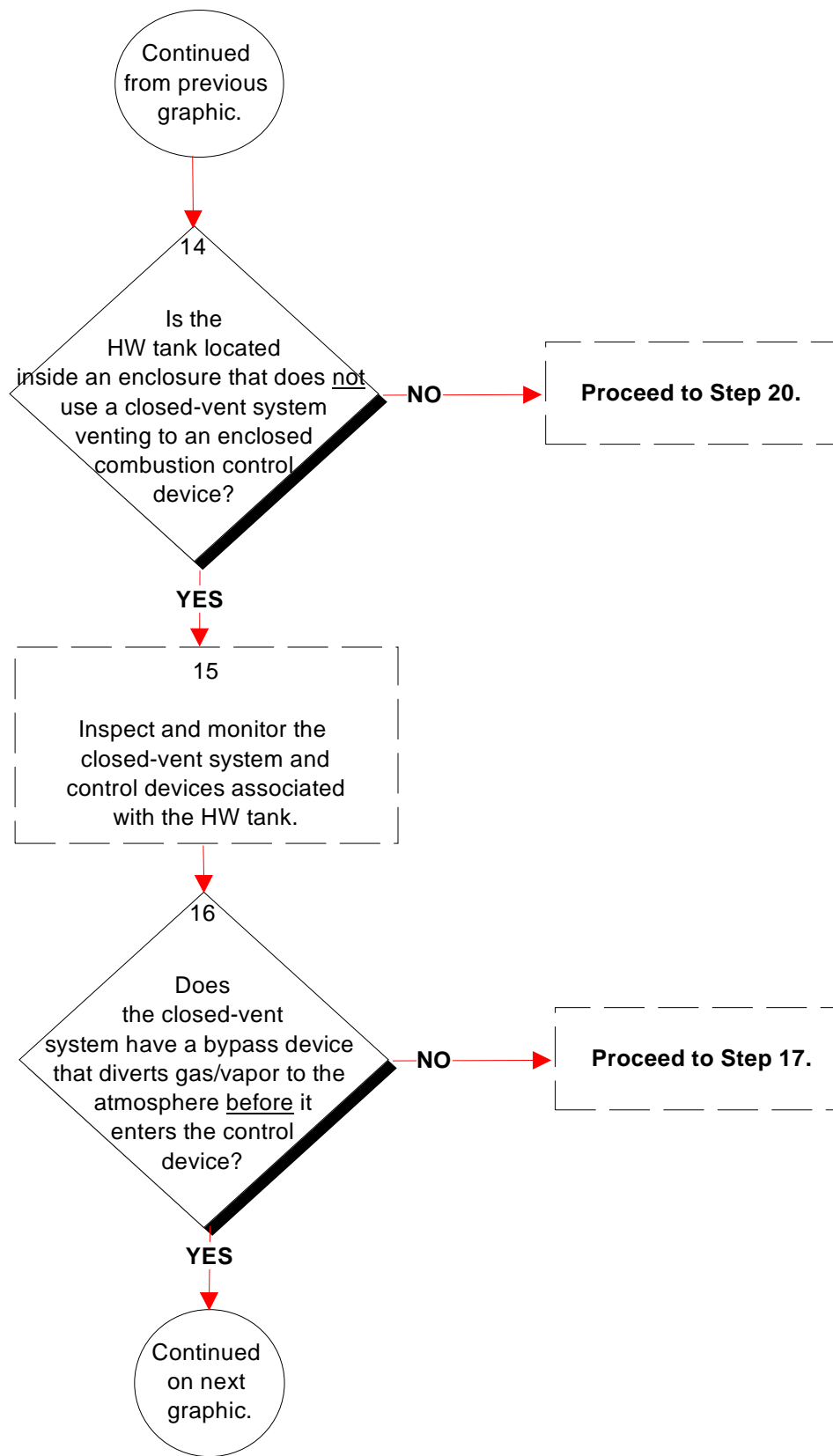
Step 11 Following the initial inspection and monitoring of the cover, subsequent inspection and monitoring may be performed at intervals longer than 1 year provided the owner/operator designates a cover as an "unsafe to inspect and monitor" because all of the following conditions are met:

- The owner/operator determines that inspection or monitoring of the cover would expose a worker to dangerous, hazardous, or other unsafe conditions;
- The owner/operator prepares a written explanation for the cover stating the reasons why the cover is unsafe to visually inspect or to monitor, if required; and
- The owner/operator develops and implements a written plan and schedule to inspect and monitor the cover using the procedures specified in this module as frequently as practicable during those times when a worker can safely access the cover.

[40 CFR 264.1084(l)(1)]

Step 12 Following initial inspection and monitoring of the cover, subsequent inspections and monitoring may be performed at intervals longer than 1 year when a tank is buried partially or entirely underground.

Step 13 The owner/operator is required to perform the cover inspection and monitoring requirements only for those portions of the tank cover and any connections to the tank (e.g., fill ports, access hatches, gauge wells, etc.) that are located on or above the ground surface. [40 CFR 264.1084(l)(2)]



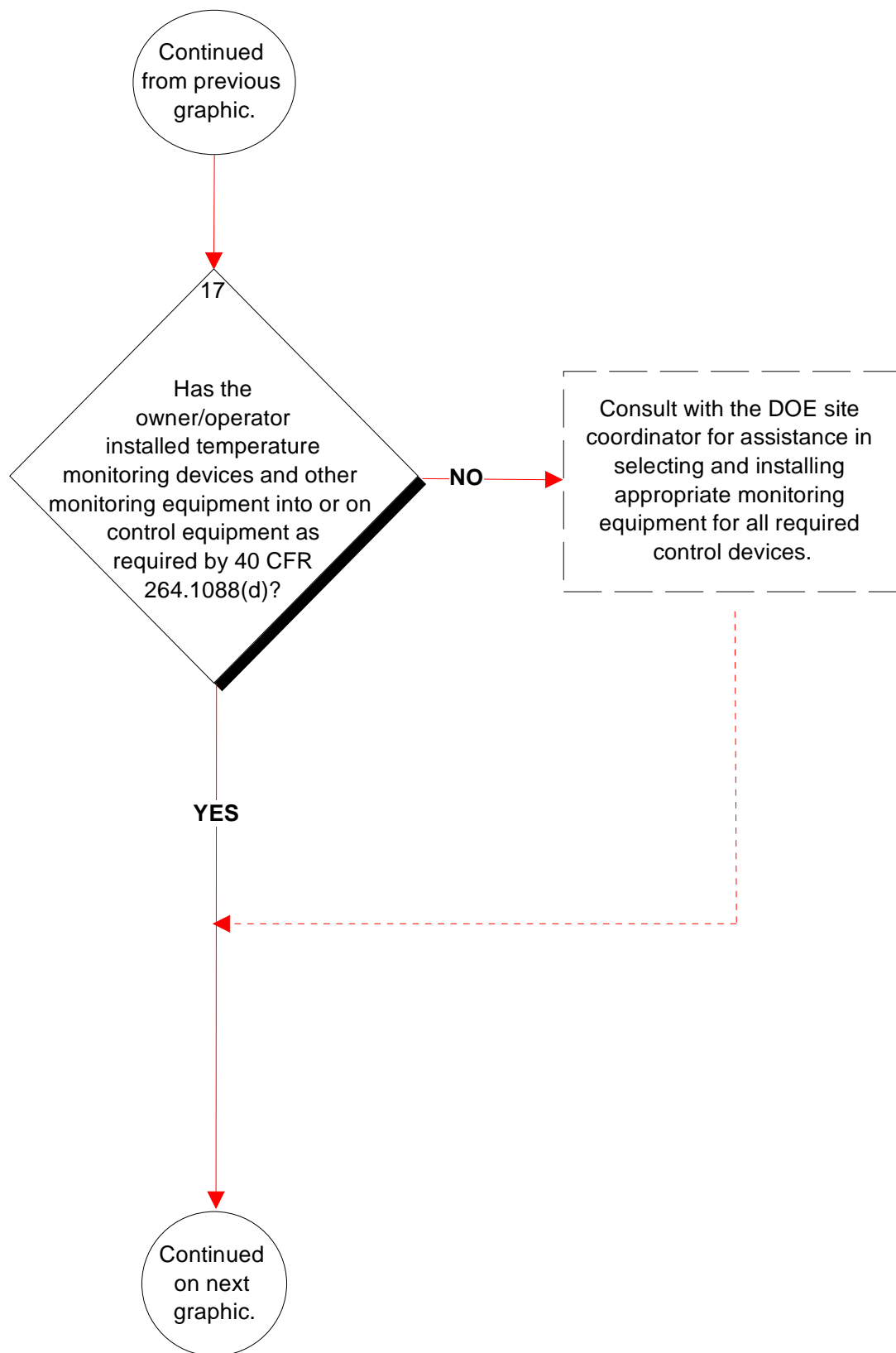
Step 14 As with other Subpart CC controls that use closed-vent systems (e.g., fixed roofs), owners/operators who control air pollutant emissions from Level 2 tanks by venting enclosure emissions through a closed-vent system to an enclosed combustion control device (i.e., vapor incinerator, boiler, or process heater) must inspect and monitor the closed-vent system and control device as specified in Steps 15 - 18.

Step 15 Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as 40 CFR 264.1034(b). [NOTE: 40 CFR 264.1034(b) states that when a closed-vent system is tested for compliance with no detectable emissions, Reference Method 21 in 40 CFR Part 60 shall be used. The detection instrument shall also meet the performance criteria of Reference Method 21.]

Closed-vent systems shall be monitored to determine compliance with this section during the initial leak detection monitoring, which shall be conducted by the date that the facility becomes subject to the provisions of this section, annually, and at other times as requested by the Regional Administrator. For the annual leak detection monitoring after the initial leak detection monitoring, the owner/operator is not required to monitor those closed-vent system components which operate in vacuum service, or those closed-vent system joints, seams, or other connections that are permanently or semi-permanently sealed (e.g., a welded joint between two sections of metal pipe or a bolted and gasketed pipe flange).

Detectable emissions, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be controlled as soon as practicable, but not later than 15 calendar days after the emission is detected. A first attempt at repair shall be made no later than 5 calendar days after the emission is detected. Closed vent systems and control devices shall be operated at all times when emissions may be vented to them.

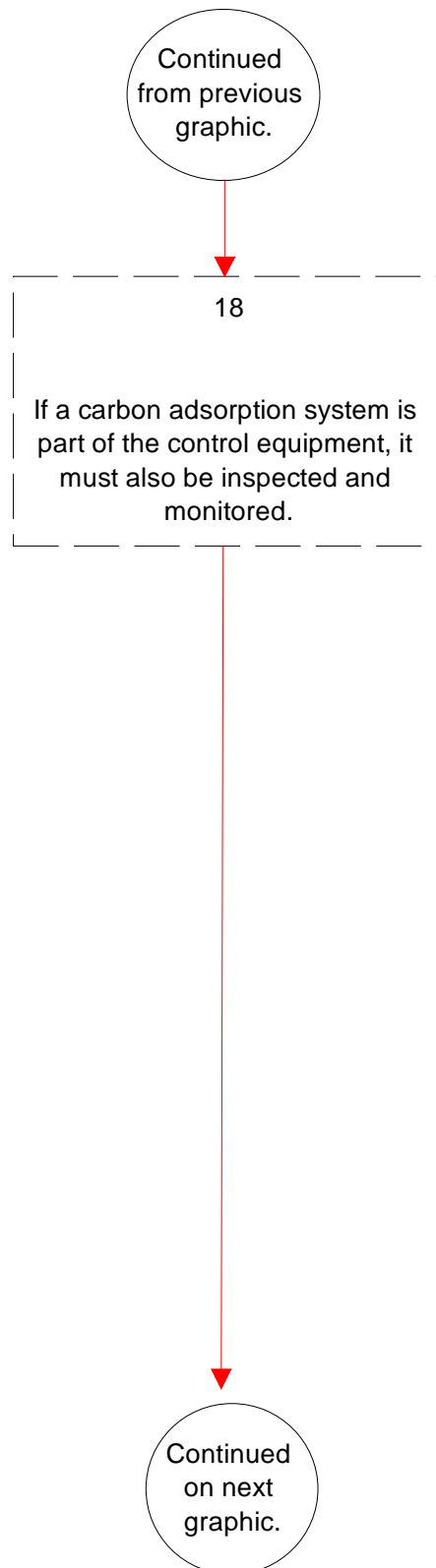
Step 16 When the closed-vent system includes bypass devices that could be used to divert the gas or vapor stream to the atmosphere before entering the control device, each bypass device shall be equipped with either a flow indicator or a seal or locking device (e.g., car-seal or a lock-and-key configuration valve). If a seal or locking device is used, the owner or operator must visually inspect the seal or closure mechanism at least once every month to verify that the bypass mechanism is maintained in the closed position. [40 CFR 264.1087(b)(3)(ii)].



Step 17 The owner/operator shall install, calibrate, and maintain according to the manufacturer's specifications the following, as appropriate:

- A flow indicator that provides a record of vent stream flow from each affected process vent to the control device at least once every hour. The flow indicator sensor shall be installed in the vent stream at the nearest feasible point to the control device inlet but before the point at which the vent streams are combined.
- For a thermal vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. The temperature sensor shall be installed at a location in the combustion chamber downstream of the combustion zone.
- For a catalytic vapor incinerator, a temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. One temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed inlet and a second temperature sensor shall be installed in the vent stream at the nearest feasible point to the catalyst bed outlet.
- For a flare, a heat sensing monitoring device equipped with a continuous recorder that indicates the continuous ignition of the pilot flame.
- For a boiler or process heater having a design heat input capacity less than 44 MW, a temperature monitoring device equipped with a continuous recorder. The device shall have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. The temperature sensor shall be installed at a location in the furnace downstream of the combustion zone.
- For a boiler or process heater having a design heat input capacity greater than or equal to 44 MW, a monitoring device equipped with a continuous recorder to measure a parameter(s) that indicates good combustion operating practices are being used.
- For a condenser, either:
 - A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the condenser; or
 - A temperature monitoring device equipped with a continuous recorder. The device shall be capable of monitoring temperature at two locations and have an accuracy of ± 1 percent of the temperature being monitored in $^{\circ}\text{C}$ or $\pm 0.5^{\circ}\text{C}$, whichever is greater. One temperature sensor shall be installed at a location in the exhaust vent stream from the condenser, and a second temperature sensor shall be installed at a location in the coolant fluid exiting the condenser.

[40 CFR 264.1033(f)(1), & (2)(i) through (vi)]

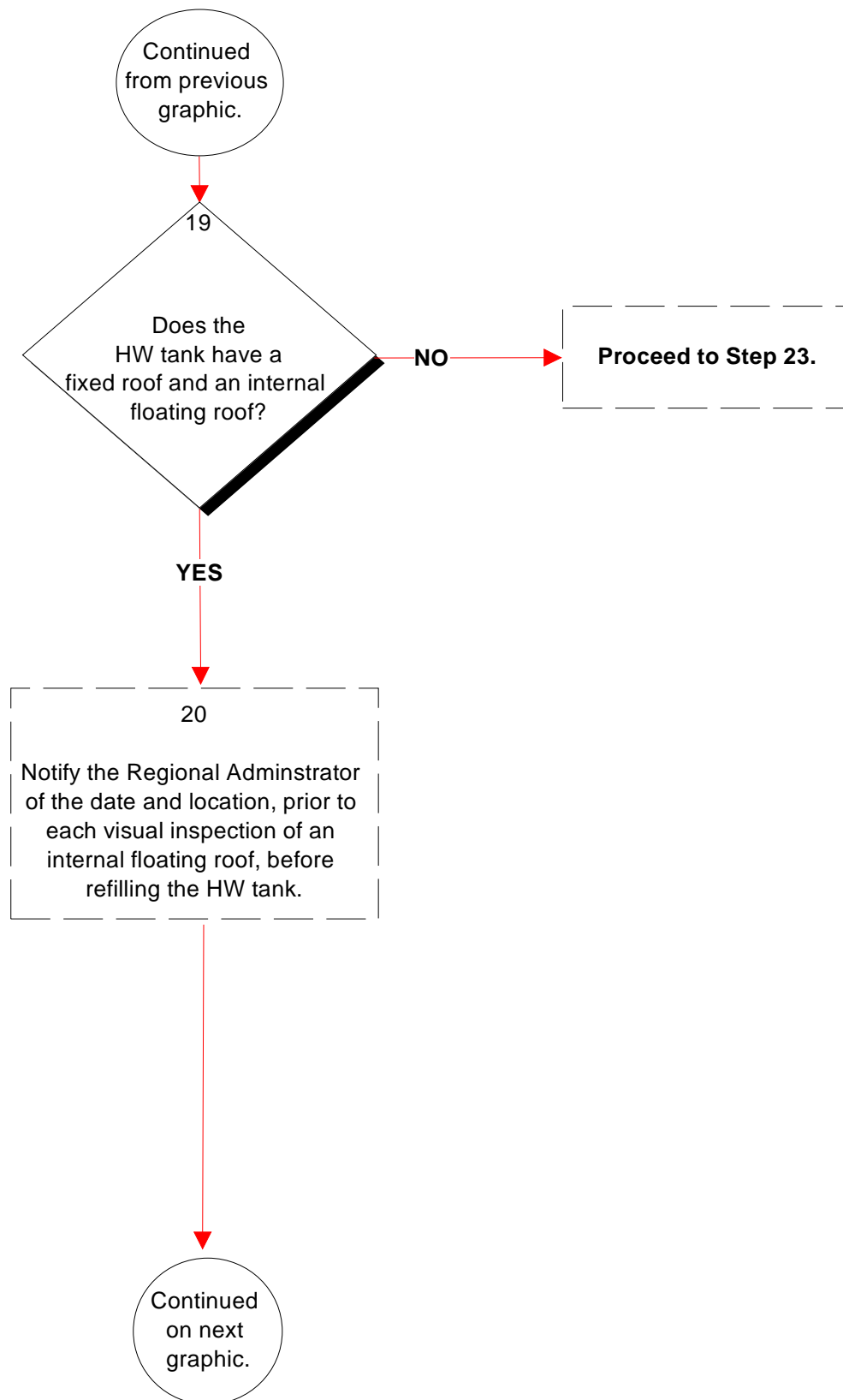


Step 18 For a carbon adsorption system that regenerates the carbon bed directly in a control device such as fixed-bed carbon adsorber, either:

- A monitoring device equipped with a continuous recorder to measure the concentration level of the organic compounds in the exhaust vent stream from the carbon bed; or
- A monitoring device equipped with a continuous recorder to measure a parameter that indicates the carbon bed is regenerated on a regular, predetermined time cycle.

For carbon adsorption system such as a carbon canister that does *not* regenerate the carbon bed directly onsite in the control device shall replace the existing carbon in the control device with fresh carbon on a regular basis by using one of the following procedures:

- Monitor the concentration level of the organic compounds in the exhaust vent stream from the carbon adsorption system on a regular schedule, and replace the existing carbon with fresh carbon immediately when carbon breakthrough is indicated. The monitoring frequency shall be daily or at an interval no greater than 20 percent of the time required to consume the total carbon working capacity established as a requirement of Sec. 264.1035(b)(4)(iii)(G), whichever is longer; or
- Replace the existing carbon with fresh carbon at a regular, predetermined time interval that is less than the design carbon replacement interval established as a requirement of Sec. 264.1035(b)(4)(iii)(G).



Step 19 After installation, owners or operators of internal floating roofs shall visually inspect the floating roof and its closure devices for defects that could result in air pollutant emissions. Defects include, but are not limited to: The internal floating roof is not floating on the surface of the liquid inside the tank; liquid has accumulated on top of the internal floating roof; any portion of the roof seals have detached from the roof rim; holes, tears, or other openings are visible in the seal fabric; the gaskets no longer close off the hazardous waste surface from the atmosphere; or the slotted membrane has more than 10 percent open area.

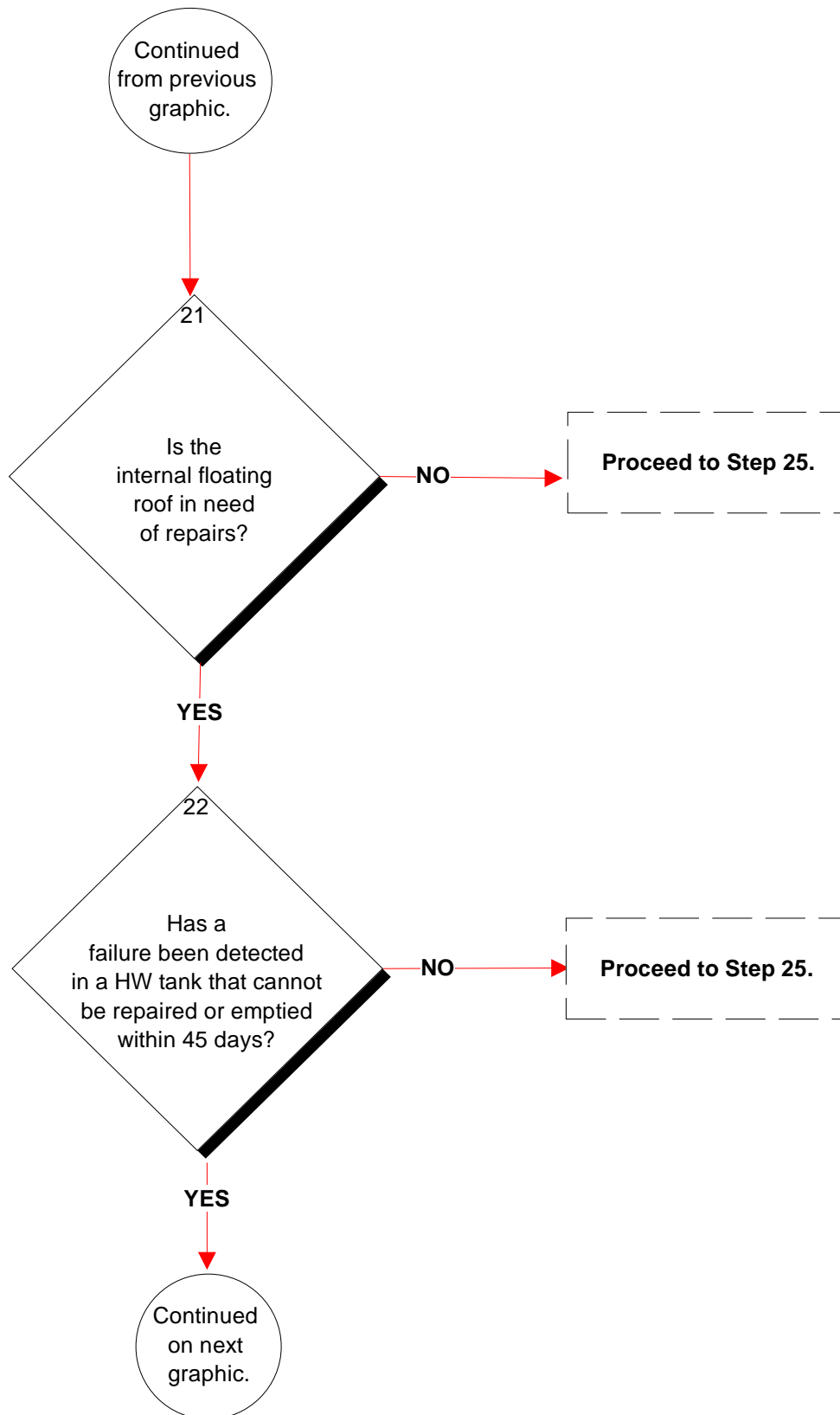
The owner or operator shall inspect the internal floating roof components as follows unless the owner or operator is using the alternative below:

- Visually inspect the internal floating roof components through openings on the fixed-roof (e.g., manholes and roof hatches) at least once every 12 months after initial fill, and
- Visually inspect the internal floating roof, primary seal, secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 10 years.

The internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) should also be inspected each time the tank is emptied and degassed. If the internal floating roof has defects (e.g., the primary seal has holes, tears, or other openings in the seal or the seal fabric; or the gaskets no longer close off the waste surfaces from the atmosphere; or the slotted membrane has more than 10 percent open area) the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the tank with HW.

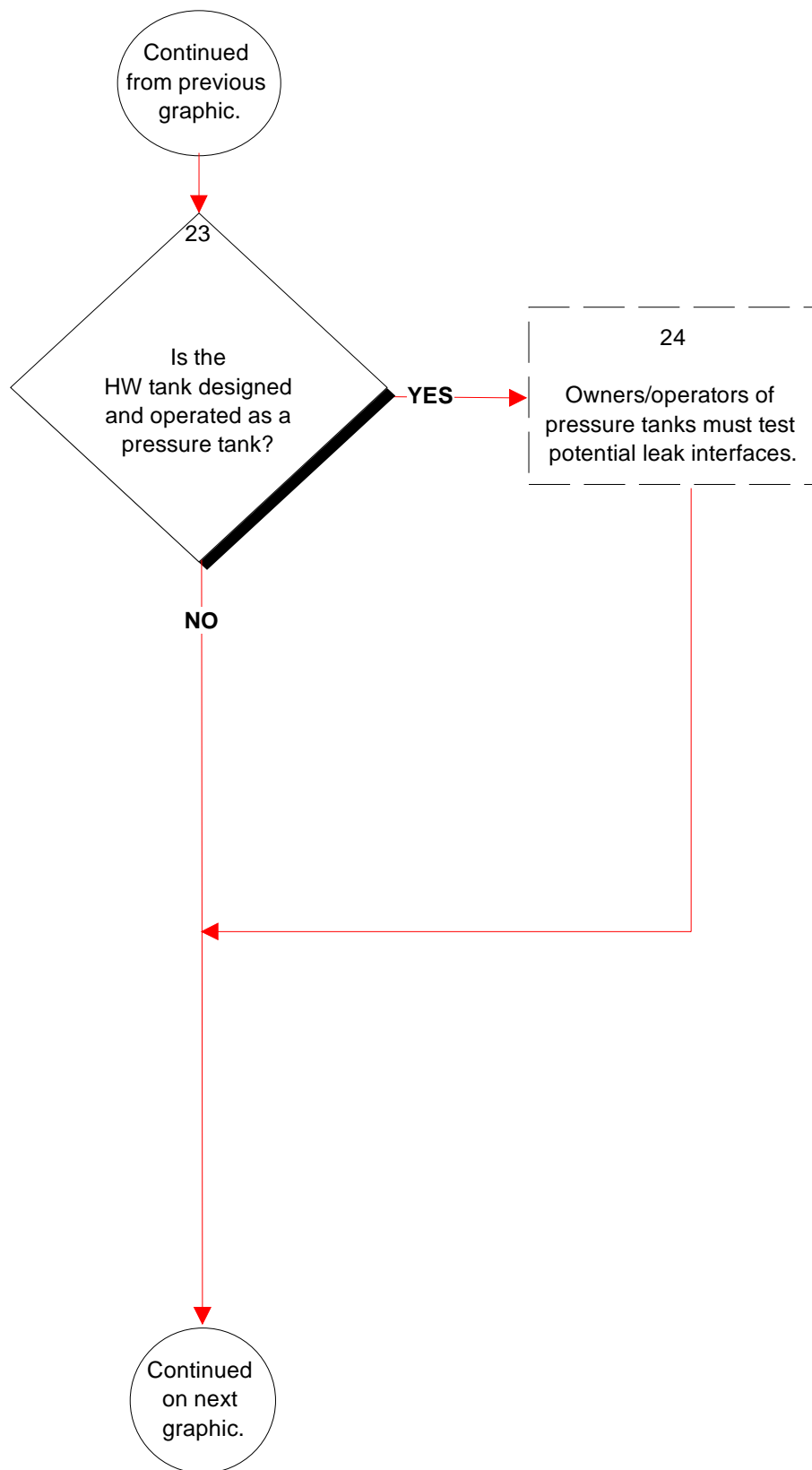
As an alternative to performing these inspections, for an internal floating roof equipped with two continuous seals mounted one above the other, the owner or operator may visually inspect the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals (if any) each time the tank is emptied and degassed and at least every 5 years. [40 CFR 264.1084(e)(3)]

Step 20 Owners/operators shall notify the Regional Administrator prior to each inspection of a HW tank using a fixed roof with an internal floating roof. For visual inspections of an internal floating roof in a tank that has been emptied and degassed, written notification identifying the date and location of the inspection shall be prepared and sent by the owner or operator so that it is received by the Regional Administrator at least 30 calendar days before refilling the tank. However, when a visual inspection is unplanned, the owner or operator shall notify the Regional Administrator as soon as possible, but no later than 7 calendar days before refilling of the tank. This notification may be made by telephone and immediately followed by a written explanation for why the inspection is unplanned. Alternatively, written notification, including the explanation for the unplanned inspection, may be sent so that it is received by the Regional Administrator at least 7 calendar days before refilling the tank. [40 CFR 264.1084(e)(3)(iv)]



- Step 21** If a defect is detected (e.g., the internal floating roof is not resting on the surface of the HW inside the tank or there is liquid accumulated on top of the roof, any portion of the roof seals have detached from the roof rim, there are holes or tears in the seal fabric), the owner/operator shall make first efforts at repair of the defect no later than 5 calendar days after detection.
- Step 22** The owner or operator shall repair a defect or failure that is detected during inspections required by this module as soon as possible, but no later than 45 calendar days after detection. Repair of a defect or failure may be delayed beyond 45 calendar days if the owner or operator determines that repair of the defect requires emptying or temporary removal from service of the tank and no alternative tank capacity is available at the site to accept the hazardous waste normally managed in the tank. In this case, the owner or operator shall repair the defect the next time the process or unit that is generating the hazardous waste managed in the tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

[40 CFR 264.1084(k)(2)]



Step 23 To be considered a pressure tank, tank openings must be equipped with closure devices that are designed to operate with *no detectable organic emissions* during routine operations, including filling and emptying. Whenever an affected HW is in the tank, the tank shall be operated as a closed system that does not vent to the atmosphere except (1) in the event that a safety device, as defined in 40 CFR 265.1081, is required to open to avoid an unsafe condition; and (2) at those times when purging of inerts from the tank is required and the purge stream is routed to a Subpart CC-compliant closed-vent system and control device. [40 CFR 264.1084(h)]

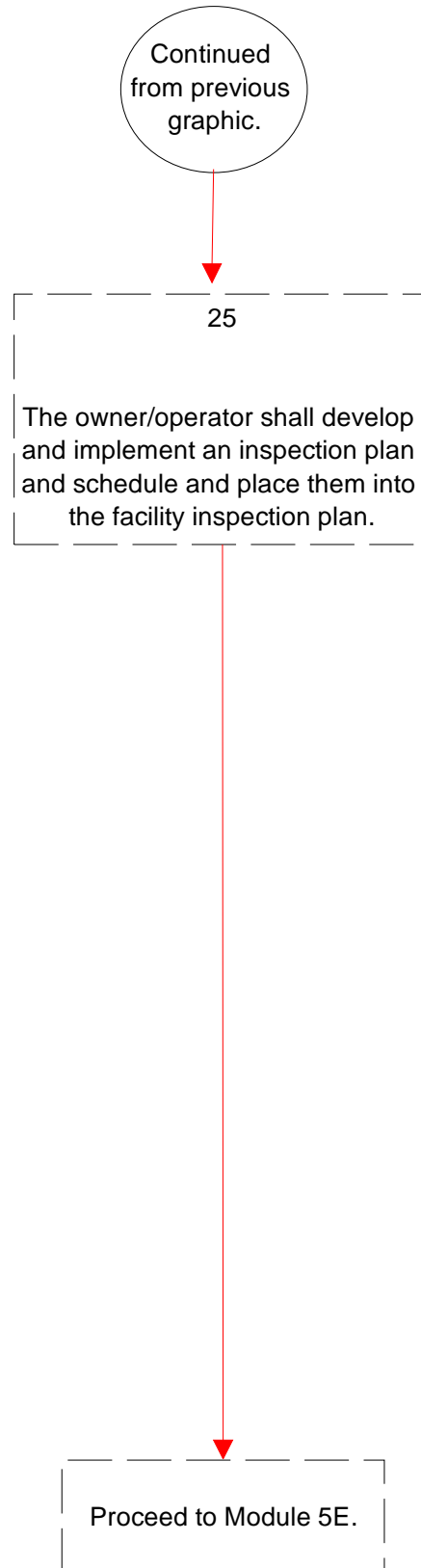
Step 24 Owners/operators will need to test each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices to ensure that the tank is designed and operates with no detectable emissions. Potential leak interfaces that are associated with covers and closure devices include, but are not limited to: The interface of the cover and its foundation mounting; the periphery of any opening on the cover and its associated closure device; and the sealing seat interface on a spring-loaded pressure relief valve.

The test shall be performed when the HW tank contains a HW having an organic concentration representative of the range of concentrations for the HW expected to be managed in the unit. During the test, the cover and closure devices shall be secured in the closed position.

Each potential leak interface shall be checked by traversing the instrument probe around the potential leak interface as close to the interface as possible, as described in Method 21 of 40 CFR part 60, appendix A. In the case when the configuration of the cover or closure device prevents a complete traverse of the interface, all accessible portions of the interface shall be sampled. In the case when the configuration of the closure device prevents any sampling at the interface and the device is equipped with an enclosed extension or horn (e.g., some pressure relief devices), the instrument probe inlet shall be placed at approximately the center of the exhaust area to the atmosphere.

Owners and operators shall calculate and compare with the value of 500 ppmv the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level determined according to the procedures in and performance criteria of Method 21 of 40 CFR part 60, appendix A, except when monitoring a seal around a rotating shaft that passes through a cover opening, in which case the comparison shall be as specified in paragraph (d)(9) of this section. If the difference is less than 500 ppmv, then the potential leak interface is determined to operate with no detectable organic emissions.

For the seals around a rotating shaft that passes through a cover opening, the arithmetic difference between the maximum organic concentration indicated by the instrument and the background level shall be compared with the value of 10,000 ppmw. If the difference is less than 10,000 ppmw, then the potential leak interface is determined to operate with no detectable organic emissions.



Step 25 The owner or operator shall inspect and monitor air emission control equipment used to comply with this Subpart CC tank standards 40 CFR 264.1084. The owner/operator shall develop and implement a written plan and schedule to perform all inspections and monitoring requirements. The owner/operator shall incorporate this plan and schedule into the facility inspection plan required by 40 CFR 264.15.
[40 CFR 264.1088]

The owner/operator shall inspect the readings from each monitoring device required by Steps 15 - 18 at least once each operating day to check control device operation and, if necessary, immediately implement the corrective measures necessary to ensure the control device operates in compliance with the requirements of this section.

An alternative operational or process parameter may be monitored if it can be demonstrated that another parameter will ensure that the control device is operated in conformance with these standards and the control device's design specifications.
[40 CFR 264.1033(f)(2)(vii) & (3) and 264.1033(i)]

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5.6 Module E: Recordkeeping Requirements

5.6.1 Introduction

Owners/operators of permitted TSDFs and interim status TSDFs/90-day generators must maintain accurate records of all activities required by 40 CFR Part 264, Subpart CC and 40 CFR Part 265, Subpart CC, respectively. TSDF records are maintained in the facility operating record. However, 90-day generators are not required to maintain an operating record and, therefore, can maintain Subpart CC documentation in their administrative files and records. HW tank records that must be kept include:

- The results of all waste determinations such as of volatile organic concentrations at the point of waste origination/waste treatment and maximum organic vapor pressures (MOVP);
- Tank identification number
- Emission control equipment inspection and monitoring results, including dates and information related to each defect detected and the repairs made;
- Documentation describing internal and external floating roof design and the dimensions;
- Calculations and measurements verifying that enclosures are permanent total enclosure;
- Design specifications/certifications, performance test results, planned routine maintenance operations, and unexpected control device system malfunctions and related actions;
- Management of carbon removed from carbon adsorption systems;
- Identification of incinerators, boilers, or industrial furnaces used to treat HW in accordance with the general requirements of Subpart CC; and
- Identification of HW tank covers/devices designated as "unsafe to inspect or monitor."

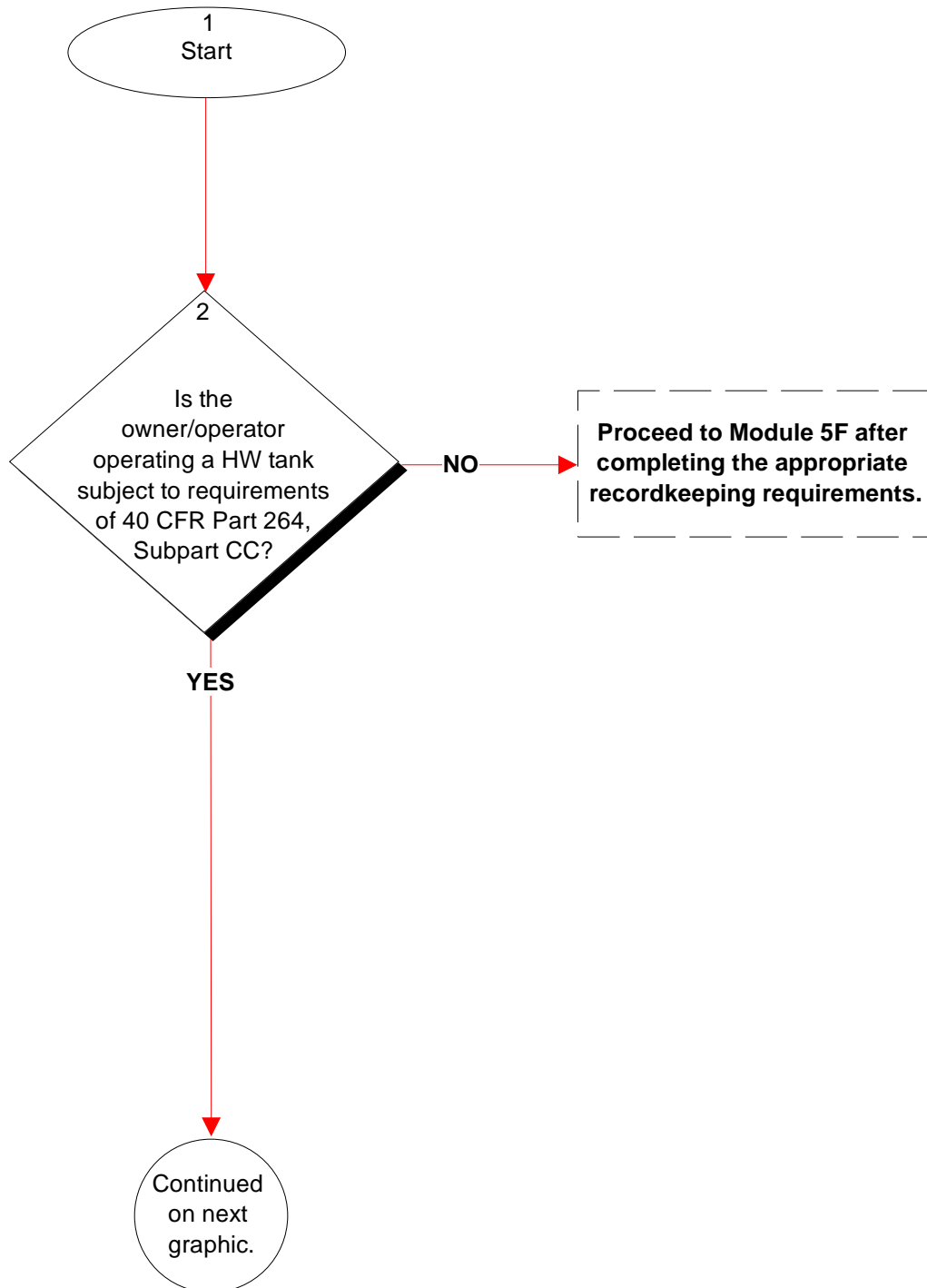
5.6.2 Milestones

Has the owner/operator maintained all records in accordance with 40 CFR 264.1088/265.1089?

Owners/operators of TSDFs and 90-generators should examine their operating record and determine whether:

- Documentation for air emission control equipment design documentation and information is retained the facility operating record or 90-day generator files until the air emission control equipment is replaced or otherwise no longer in service;
- Information regarding HW tanks that are operating air emission controls in accordance with applicable CAA regulations codified in 40 CFR Part 60, Part 61, and/or Part 63 are maintained in the operating record for as long as a HW tank system is not using Subpart CC air emission controls; and
- Remaining Subpart CC records are maintained in the operating record for a minimum of 3 years.

Figure 5.5: Recordkeeping Requirements



Step 1 Start.

Step 2 HW tanks that are exempted from complying with Subpart CC under 40 CFR 264.1080(b) are, with one exception, not required to comply with Subpart CC recordkeeping provisions. The exception is for affected HW tanks that are in compliance with an applicable CAA regulation at 40 CFR Part 60, Part 61, or Part 63 [40 CFR 264.1080(b)(7)]. For these tanks, owners/operators must record and maintain the following information in the operating record for as long as the waste management unit is not using HW tank air emission controls specified in 40 CFR 264.1084:

- Certification that the HW tank is equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (40 CFR part 60, part 61, or part 63), and
- Identification of the specific 40 CFR part 60, part 61, or part 63 requirement, which the HW tank is using to remain compliant.

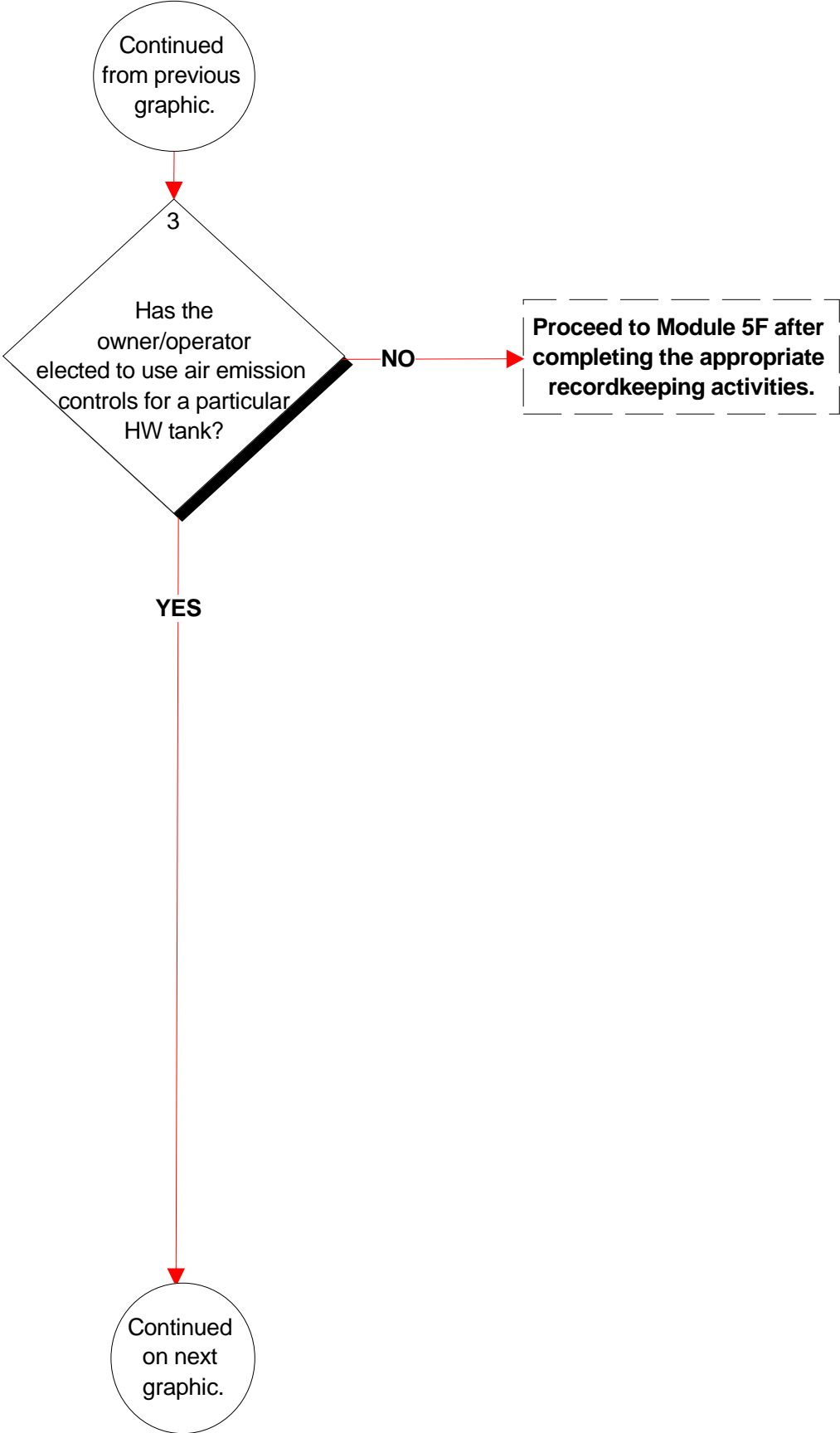
For HW tanks with "equipment" subject to 40 CFR Part 61, Subpart V, owners/operators may demonstrate Subpart CC compliance by maintaining documentation pursuant to either Subpart CC or Subpart V, to the extent that the documentation required by 40 CFR Part 61 duplicates that of Subpart CC.

For HW tanks exempted [under 40 CFR 264.1082(c)] from Subpart CC air emission control *standards* specified in 40 CFR 264.1084, owners/operators are *not* exempted from and, therefore, remain subject to prescribed Subpart CC recordkeeping provisions. For these and other HW tanks using controls that are subject to requirements of Subpart CC, each owner or operator shall record and maintain the information specified in 40 CFR 264.1089(b) through (j). In addition to the tank/control-specific information described later in this module, this includes the following information, as applicable:

- A HW tank identification number (or other unique identification description as selected by the owner or operator).
- Each inspection required by 40 CFR 264.1084 including the date each inspection was conducted and, for each defect detected during the inspection: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of 40 CFR 264.1084, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected.

Except for air emission control equipment design documentation and CAA-related information (discussed above), these and other records required under 40 CFR 264.1089 shall be maintained in the operating record for a minimum of 3 years. Air emission control equipment design documentation shall be maintained in the operating record until the air emission control equipment is replaced or otherwise no longer in service.

Figure 5.5: Recordkeeping Requirements - continued



Step 3 An owner/operator electing not to use air emission controls for a particular tank otherwise subject to 40 CFR Part 264, Subpart CC, in accordance with the hazardous waste organic concentration conditions in 40 CFR 264.1082(c)(1) or 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi), shall record the information used for each waste determination (e.g., test results, measurements, calculations, and other documentation) in the facility operating log. An initial determination that HW entering the tank has an average VO concentration at the point of waste origination/treatment of less than 500 ppmw must be made before the first time any portion of the material is placed into an exempted tank. If analysis results for waste samples are used for the waste determination, then the owner/operator shall record the date, time, and location that each waste sample is collected [40 CFR 264.1089(f)(1)]. Also, owners/operators using direct measurements to determine average VO concentrations at the point of waste origination shall:

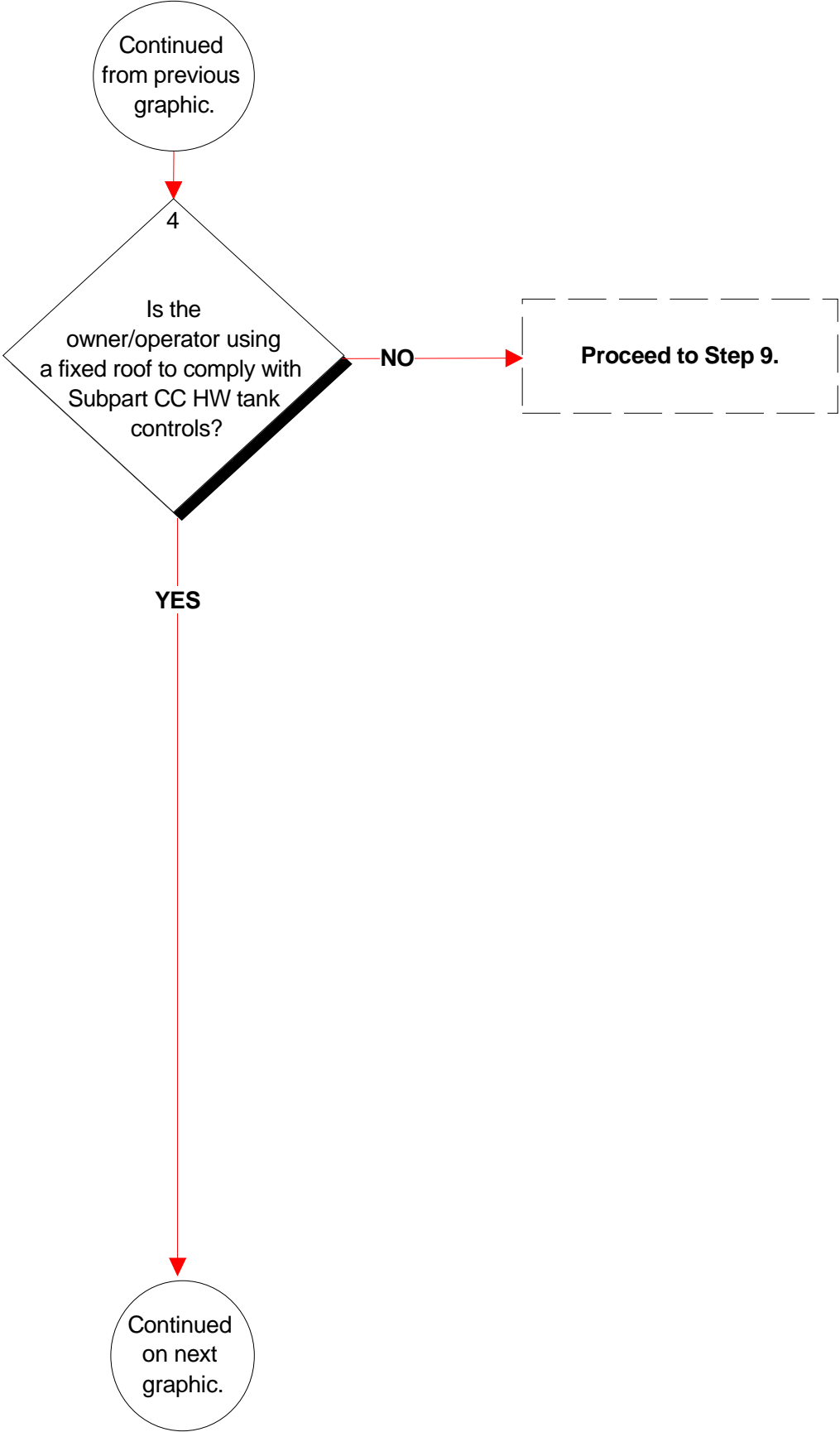
- Identify and record the point of waste origination for the HW,
- Designate, on a mass-weighted average basis, the averaging period to be used for determining the average VO concentration for the HW stream; and
- Prepare and maintain on-site a written site sampling plan that describes the procedure by which representative samples of the HW stream are collected and handled, and by which sample integrity is maintained [40 CFR 265.1084(a)(3)].

In addition to preparing and maintaining the same type of written site sampling plan, owners/operators placing **treated** HW in a tank exempted from using air emission controls must identify and record:

- The designated provision in 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi) under which the waste determination for the treated HW is being performed,
- The point of waste treatment for the hazardous waste,
- The averaging period used (or designated to be used) for determining the average VO concentration for the HW stream on a mass-weighted average basis.
[40 CFR 265.1084(b)(2) and (3)].

Although they are not subject to the preceding waste determination requirements, owners/operators electing to comply with organics removal or destruction requirements of 40 CFR 264.1082(c)(2)(vii) or (c)(2)(viii) must record the identification number for the incinerator, boiler, or industrial furnace in which the HW is treated.

Figure 5.5: Recordkeeping Requirements - continued

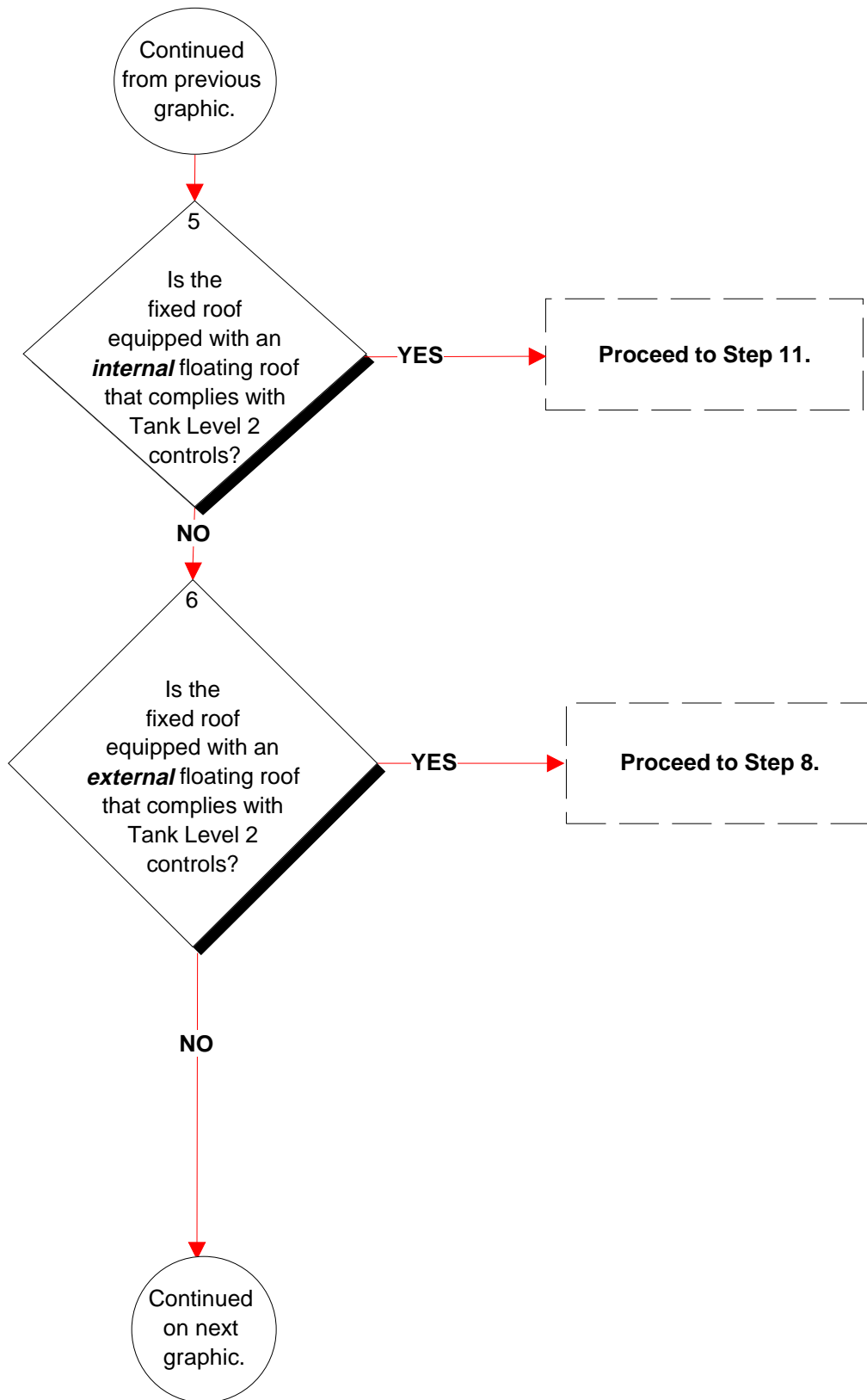


Step 4 Regardless of whether they are equipped with a closure device or a closed-vent system that is vented to a control device, owners/operators that are using a fixed roof to comply with Tank Level 1 controls [40 CFR 264.1084(c)] shall determine the maximum organic vapor pressure (MOVP) for each HW to be managed. The MOVP must be determined before the first time HW is placed in the tank. Owner/operators managing HW in accordance with Tank Level 1 standards must record the following information for each determination that the MOVP of the HW is less than the applicable limit for the selected tank design capacity:

- Date and time each waste sample is collected for direct measurement of maximum organic vapor pressure in accordance with 40 CFR 264.1083(c);
- The analysis methods used;
- The analysis results of each determination; and
- The tank dimensions and design capacity.

This determination may be based on either direct measurement or knowledge. Direct measurement procedures should appear in a written sampling plan. When knowledge is used, documentation that presents the information used as the basis for the owner/operator determination must be prepared and maintained.

Figure 5.5: Recordkeeping Requirements - continued



Step 5 Owners/operators who elect to install and operate a fixed roof equipped with an *internal* floating roof shall include the following information in the operating record:

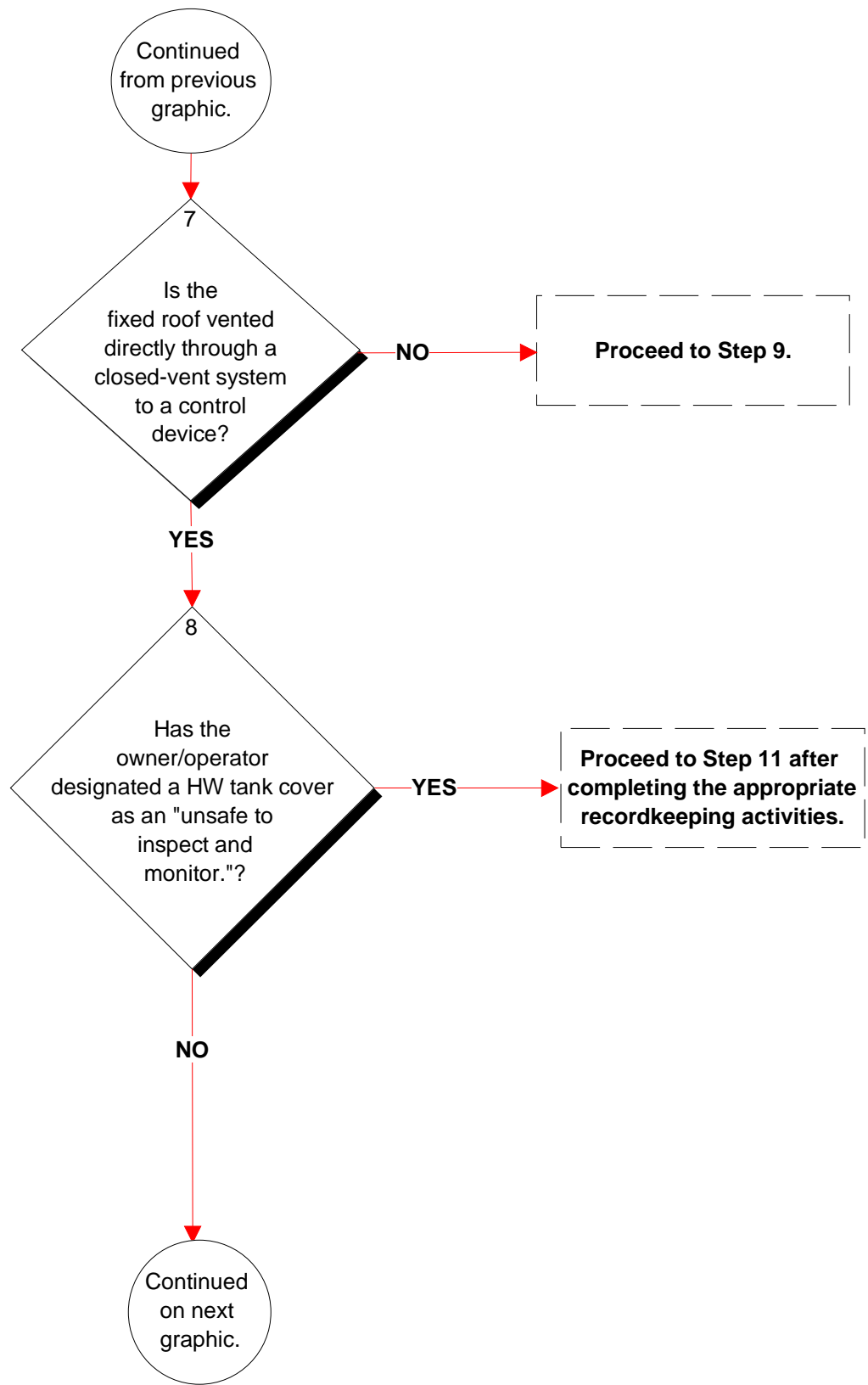
- For each HW tank, a tank identification number (or other unique identification description as selected by the owner or operator);
- Documentation describing the control equipment design;
- Records of each visual inspection performed as required by 40 CFR 264.1084(e)(3)/265.1084(e)(3). Record shall identify each tank on which the inspection was performed and shall include the date the tank inspection was conducted, the observed condition of each component of the control equipment (seals, internal floating roof, and fittings); and
- If any of the defects described in 40 CFR 264.1084(e)(3)/265.1084(e)(3) are detected during the visual inspection, the records shall identify: The location of the defect, a description of the defect, the date of detection, and corrective action taken to repair the defect. In the event that repair of the defect is delayed in accordance with the provisions of 40 CFR 265.1084/265.1085, the owner or operator shall also record the reason for the delay and the date that completion of repair of the defect is expected. [40 CFR 264.1089(b)(1)(ii)/265.1090(b)(1)(ii)]

Step 6 Owners/operators who elect to install and operate a fixed roof equipped with an *external* floating roof shall include the following information in the operating record:

- For each HW tank, a tank identification number (or other unique identification description as selected by the owner or operator);
- Documentation describing the floating roof design and the dimensions of the tank;
- Records for each seal gap inspection [40 CFR 264.1085(f)(3)/265.1085(f)(3)] describing the results of the seal gap measurements, including: the date that the measurements were performed, the raw data obtained for the measurements, and the calculations of the total gap surface area; and
- Records for each seal gap measurement that does not conform to specifications [264.1085(f)(1)/265.1085(f)(1)] including a description of the repairs that were made, the date the repairs were made, and the date the tank was emptied, if necessary.

[40 CFR 264.1089(b)(2)(iii)/265.1090(b)(2)(iii)]

Figure 5.5: Recordkeeping Requirements - continued

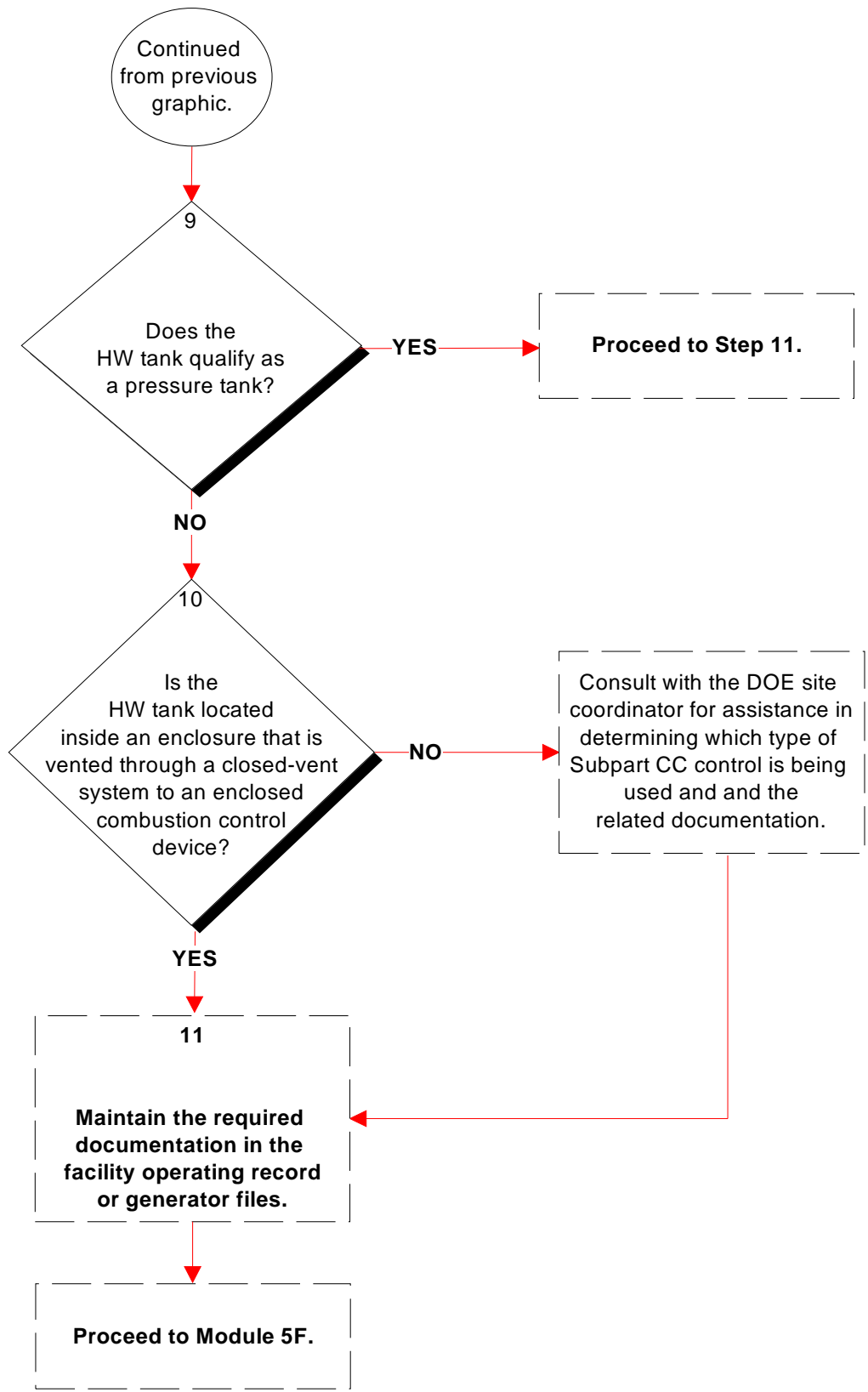


Step 7 An owner/operator electing to control air emissions by venting them from a fixed-roof tank directly through a closed-vent system to a control device shall maintain the following documentation:

- For each closed-vent system and control device installed in accordance with the requirements of 40 CFR 264.1087/265.1088, including:
 - A certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests as specified below, when the tank is, or would be, operating at capacity or the highest level reasonably expected to occur;
 - Design documentation as specified in 40 CFR 264.1035(b)(4) if a design analysis is used, including: information prepared by the owner/operator or by the control device manufacturer that describes the control device design in accordance with 40 CFR 264.1035(b)(4)(iii); and certification by the owner/operator that the control equipment meets the applicable specifications;
 - A performance test plan as specified in 40 CFR 264.1035(b)(3), if performance tests are used, and all tests results;
 - A description and date for each modification that is made to the closed-vent system or control device design;
 - Identification of operating parameters, description of the monitoring device, and diagram of monitoring sensor location(s);
 - A description of the planned routine maintenance that is anticipated to be performed for the control device during the next six month period, including the type of maintenance necessary, planned frequency of maintenance, and lengths of maintenance periods;
 - A description of the type of maintenance that was performed for the control device during the last six month period, including the type of maintenance performed and the total number of hours during which the control device did not meet the closed-vent system specifications due to planned routine maintenance;
 - Information for those unexpected control device system malfunctions that require the control device not control device specifications, including the occurrence and duration of each malfunction of the control device system; the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed-vent system to the control device while the control device is not properly functioning; and actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation.

Step 8 Owners/operators of HW tanks using (1) a fixed roof equipped with a closure device or connected by a closed-vent system that is vented to a control device or (2) an external floating roof can designate a cover as "unsafe to inspect or monitor." Pursuant to 40 CFR 264.1084(l) shall record in a log that is kept in the facility operating record a list of identification numbers for HW tanks with covers that are designated as "unsafe to inspect and monitor," as well as a written explanation for each cover stating why the cover is unsafe to visually inspect or monitor, and the written plan and schedule for inspecting and monitoring each cover.

Figure 5.5: Recordkeeping Requirements - continued



Step 9 Owners/operators who control air pollutant emissions by using a pressure tank must ensure that their HW tank openings are equipped to operate with ***no detectable organic emissions***. For the purpose of complying with Subpart CC this entails a testing of each potential leak interface (i.e., a location where organic vapor leakage could occur) on the cover and associated closure devices in accordance with the procedures specified in Method 21 of 40 CFR part 60, appendix A.

When determining whether the HW tank operates with no detectable organic emissions, certain criteria must be met (e.g., the test must be performed when HW tank contains a HW having a representative organic concentration; the detection instrument must meet prescribed performance criteria), owners/operators should consider whether they desire to maintain documentation of these and the manner each potential leak interface was checked as a best management practice.

Step 10 An owner/operator using an enclosure to comply with the Tank Level 2 control requirements specified in 40 CFR 264.1084(i)/265.1085(i) shall prepare and maintain the following records:

- The most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria of a permanent total enclosure as specified in "Procedure T--Criteria for and Verification of a Permanent or Temporary Total Enclosure" (40 CFR 52.741, appendix B); and
- Records required for the closed-vent system and control device (Go back to Step 7).

Step 11 Owners/operators of TSDFs and 90-generators should examine their HW tank and waste management activities to determine the type of documentation that must be prepared and maintained to comply with Subpart CC. Based on this evaluation, owners/operators should examine their operating record/90-generator files to ensure

- Documentation for air emission control equipment design documentation and information is retained the facility operating record or 90-day generator files until the air emission control equipment is replaced or otherwise no longer in service;
- Information regarding HW tanks that are operating air emission controls in accordance with applicable CAA regulations codified in 40 CFR Part 60, Part 61, and/or Part 63 are maintained in the operating record for as long as a HW tank system is not using Subpart CC air emission controls; and
- Remaining Subpart CC records are maintained in the operating record for a minimum of 3 years.

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5.7 Module F: Reporting Requirements

5.7.1 Introduction

Although HW tanks operating under 40 CFR Part 265 (interim status provisions) are *not* subject to any Subpart CC reporting requirements, permitted facilities must report to the EPA Regional Administrator each episode of noncompliance with 40 CFR 264.1082(c)(1) or (c)(2), 40 CFR 264.1084(c), or 40 CFR 264.1087.

For control devices, a report to the Regional Administrator is *not* required provided all of the device are operated for a six-month period such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the operating values identified in 40 CFR 264.1035(c)(4), and no flare was operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).

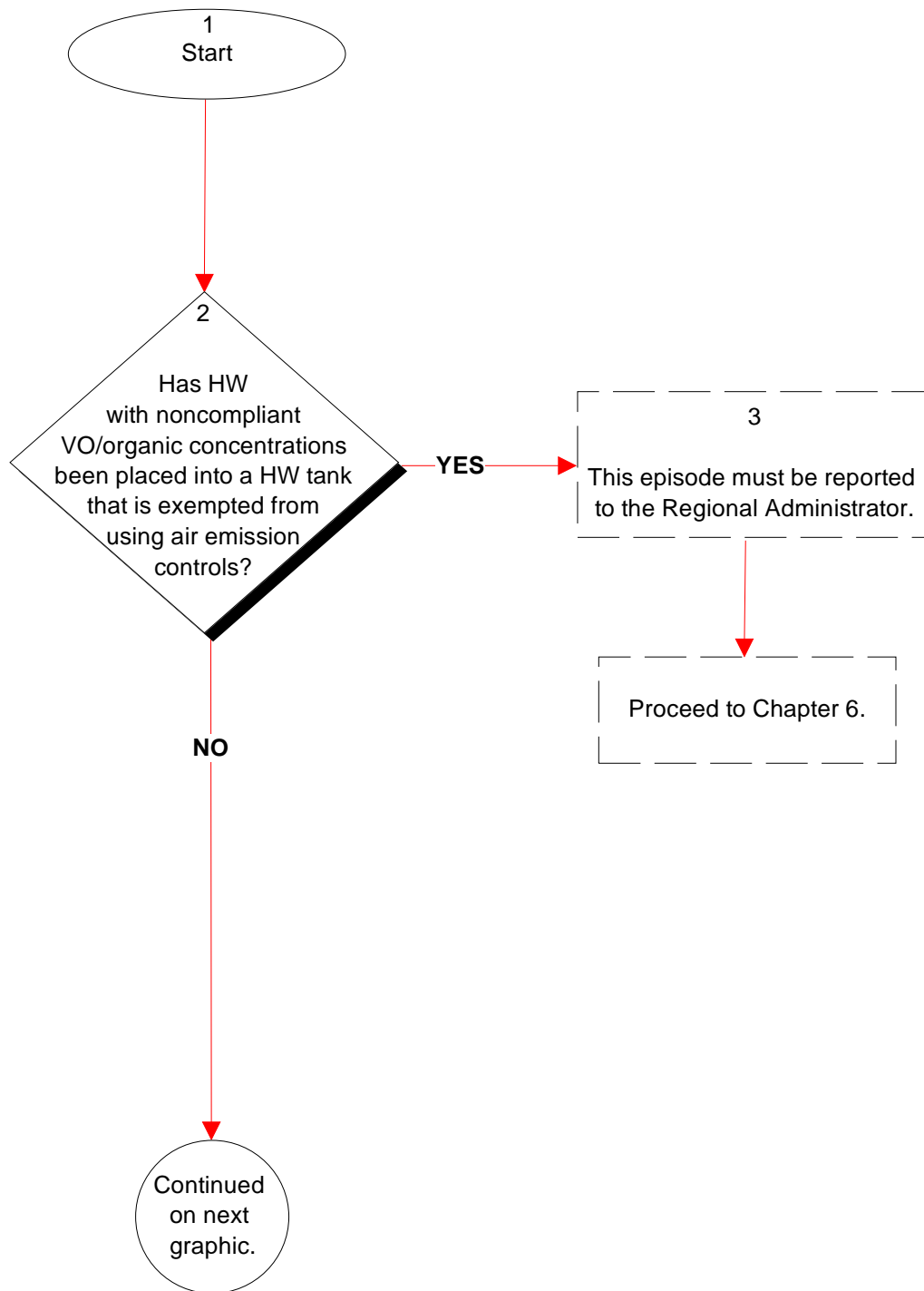
5.7.2 Milestones

Has an episode of noncompliance occurred?

Noncompliance occurs whenever:

- HW with an average VO concentration equal to or greater than 500 ppmw at the point of waste origination is placed in an exempted tank;
- A treated HW whose organic content has not been sufficiently reduced by an organic destruction or removal process and, therefore, does not meet the applicable conditions is placed in an exempted HW tank;
- A control device has emissions exceeding the applicable operating values; or
- A flare operates with visible emissions.

Figure 5.6: Reporting Requirements

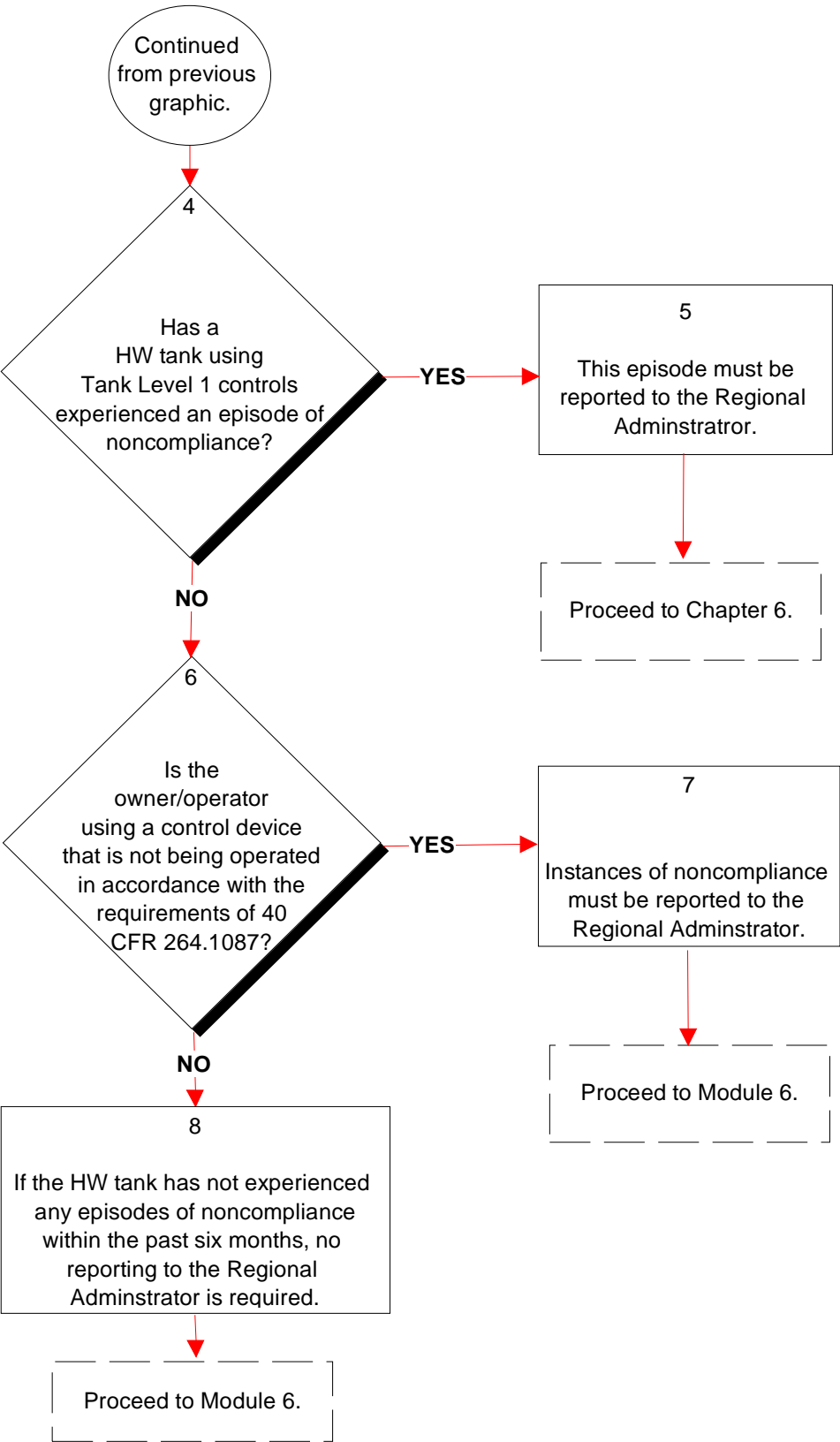


Step 1 Start.

Step 2 Each owner/operator managing HW in a tank exempted from using air emission controls under either the hazardous waste organic concentration conditions or the organic destruction or removal process conditions [40 CFR 264.1082(c)(1) and 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi), respectively] shall report to the Regional Administrator each occurrence when HW that does not meet the specified conditions is placed in an exempted HW tank. Examples of such occurrences include placing in a HW tank that is not using air emission controls a HW having an average VO concentration equal to or greater than 500 ppmw at the point of waste origination; or placing in the exempted HW tank a treated HW which fails to meet the applicable organic destruction or removal process conditions specified in 40 CFR 264.1082(c)(2)(i) through (c)(2)(vi).

Step 3 The owner/operator shall submit a written report within 15 calendar days of the time that the owner/operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.

Figure 5.6: Reporting Requirements - continued



- Step 4** Each owner/operator using Tank Level 1 air emission controls in accordance with the requirements 40 CFR 264.1084(c) must report to the Regional Administrator each occurrence when HW is managed in the tank in noncompliance with the conditions specified in 40 CFR 264.1084(b). Noncompliance occurs, for example, when the tank is used for a waste stabilization process or the maximum organic vapor pressure (MOVP) of the HW in the tank equals or exceeds the MOVP limit for the tank's design capacity category.
- Step 5** The owner/operator shall submit a written report within 15 calendar days of the time that the owner/operator becomes aware of the occurrence. The written report shall contain the EPA identification number, facility name and address, a description of the noncompliance event and the cause, the dates of the noncompliance, and the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.
- Step 6** Each owner/operator using a control device in accordance with the requirements of 40 CFR 264.1087 (standards for closed-vent systems and control devices) shall submit a semiannual written report to the Regional Administrator that describes each occurrence during the previous 6-month period (1) when a control device operated continuously for 24 hours or longer in noncompliance with the applicable operating values [defined in 40 CFR 264.1035(c)(4)]; or (2) when a flare operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).
- Step 7** The written report shall include the EPA identification number, facility name and address, an explanation of why the control device could not be returned to compliance within 24 hours, and actions taken to correct the noncompliance. The report shall be signed and dated by an authorized representative of the owner/operator.
- Step 8** A report to the Regional Administrator in accordance with Step 7 is not required for a 6-month period during which all control devices subject to 40 CFR Part 264, Subpart CC, are operated by the owner/operator such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values and no flare was operated with visible emissions for 5 minutes or longer in a two-hour period, as defined in 40 CFR 264.1033(d).

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Chapter 6

Operating and Inspection Requirements

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6.1 Introduction

6.1.1 Background

The proper operation of HW tanks mandates that reactive, ignitable, or incompatible HWs that could cause the tank to leak, rupture, or explode be kept out of the HW tank system until those HWs are treated to reduce the potential for fires or explosions. The proper operation of HW tank systems also requires the use of spill prevention procedures during transfer operations, loading, or unloading of HW tanks.

Daily inspection of tank systems is necessary to identify and remedy minor problems before they escalate and affect the integrity of the tank system.

6.1.2 Major Requirements

This chapter contains two modules, one detailing operating requirements, and one containing inspection requirements.

- **Module A: Operating Requirements.** This module addresses those requirements that must be met to safely operate HW tanks. This involves proper management of the tanks to reduce the threat of fire or explosion, and to ensure that corrosion does not occur. It also identifies requirements for use of appropriate controls and practices to prevent spills and overflows by the owner or operator.
- **Module B: Inspection Requirements.** This module addresses routine inspections that must be conducted to maintain properly operating HW tanks. Through a daily inspection program, potential problems can be quickly identified and corrected.

6.2 Module A: Operating Requirements

6.2.1 Introduction

The HW tank operating requirements detail precautions that must be taken to prevent spills and overflows from HW tank systems during transfer operations, loading, or unloading. EPA's major concern is with releases that may occur during these operations, especially for tank systems that do not yet have secondary containment.

All of the components used for the transfer of HW should be inspected on a regular basis and repaired or replaced when damage is discovered. These components include:

- Hoses, pipes, fittings, etc.;
- Couplings, pumps, and valves;
- Curbs, containment surfaces, and catchbasins;
- Control instrumentation; and
- Tank vehicles. [4]

To ensure that proper handling and other safety precautions can be taken to prevent fires, explosion, or leaks, the nature of the HW (such as its ignitability or reactivity) must be understood. Except under emergency conditions, ignitable or reactive wastes may not be placed into tanks unless certain requirements are met. It also must be determined that the HW is compatible with other HWs with which it might be stored or treated, or with the tank itself. Incompatibility of HWs may result in explosions or fires.

6.2.2 Milestones

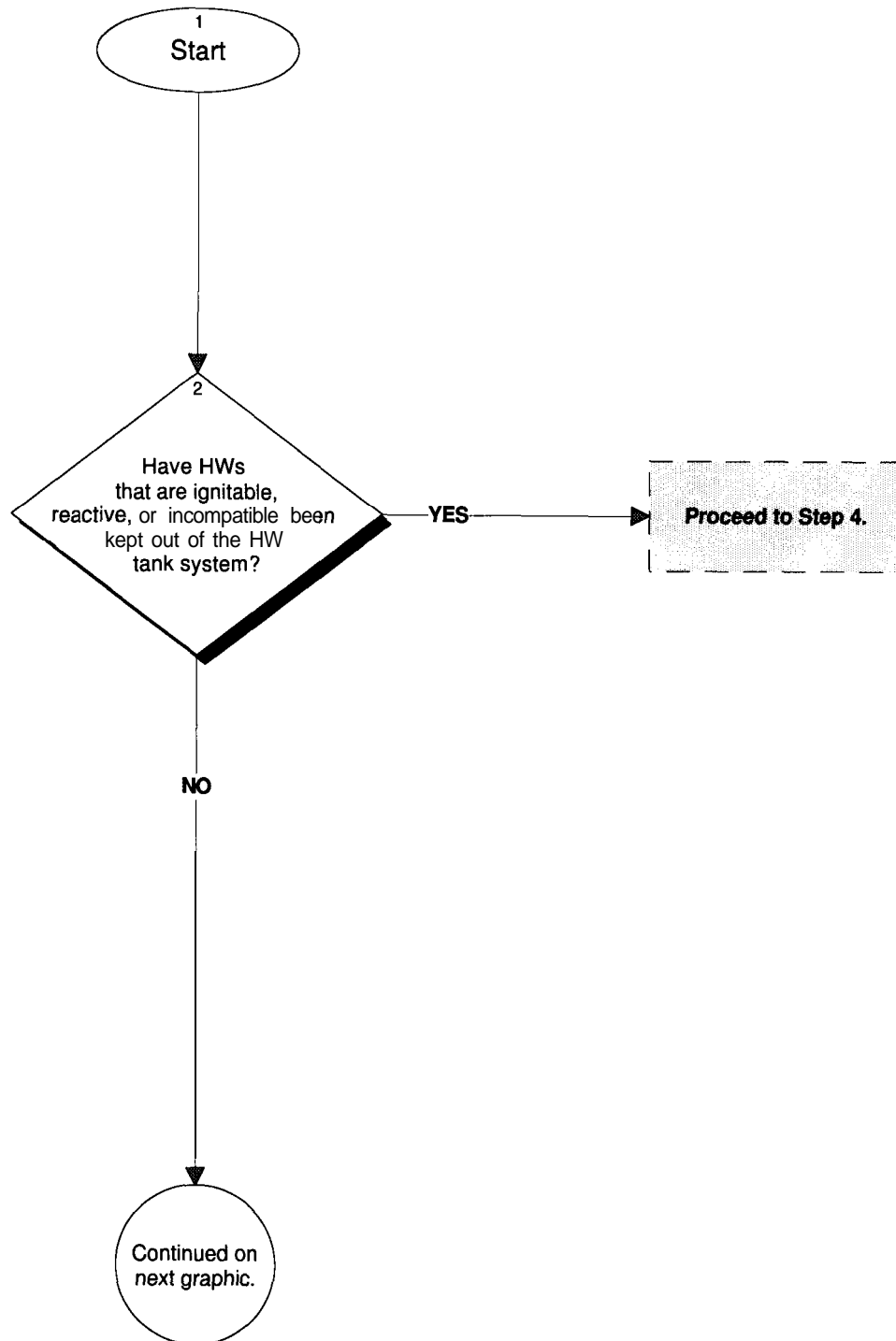
Have proper operating procedures been implemented?

The following elements must be completed to safely operate HW tanks:

- Proper spill prevention procedures and equipment must be utilized; and
- All ignitable, reactive, or incompatible HWs must be neutralized before placement in tanks (unless placement is in response to an emergency situation).

The following flowchart details applicable operating and spill prevention requirements.

Figure 6.1: Operating Requirements



Step 1 Start**Step 2** Ignitable or reactive waste must not be placed in HW tank systems unless, as required by 40 CFR 264/265.198:

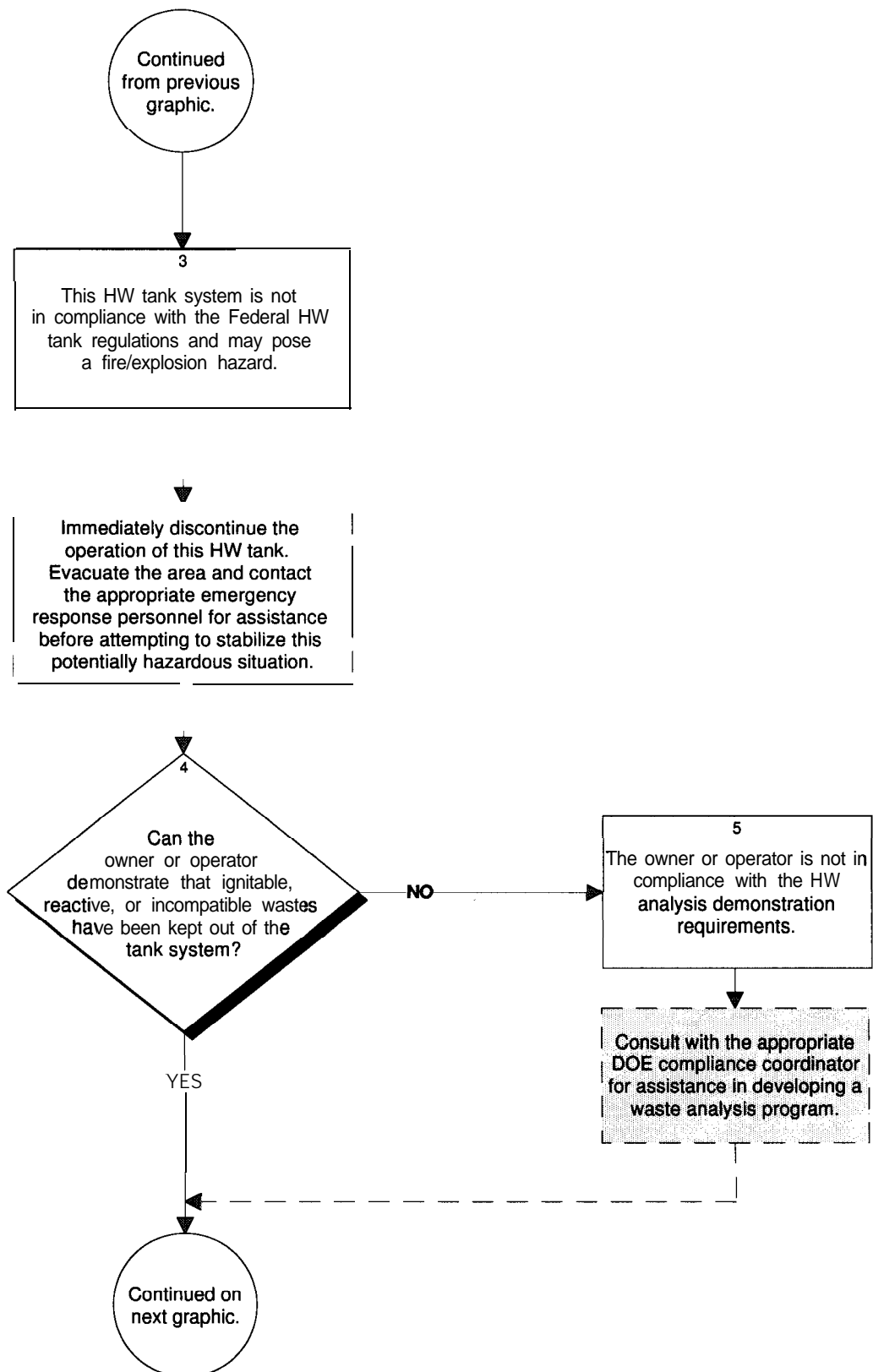
- The HW is treated or mixed before or immediately after placement in the tank system so that the resulting HW material no longer meets the definition of ignitable or reactive waste under 40 CFR 261.21 or 261.23, and the requirements of 40 CFR 264/265.17(b) for the owner/operator to take measures to prevent adverse reactions are met (see Chapter 1, Section 1.2, for the definition of ignitable or reactive waste);
- The HW is stored or treated in such a way that it is protected from any material or conditions that may cause the HW to ignite or react; or
- The tank system is used **solely** for emergencies.

The owner or operator of a facility where ignitable or reactive HW is stored or treated in a tank must maintain protective distances between the waste management area and any public ways, streets, alleys, or adjoining property lines that can be built upon. See Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code." [9]

As detailed in 40 CFR 264/265.199, incompatible HWs and/or materials must not be placed in the same tank system, and HW must not be placed in a tank system that has not been decontaminated if it previously held an incompatible HW or material, unless the requirements of 40 CFR 264/265.17(b) are met. (See the Glossary for the definition of "incompatible waste.")

Under 40 CFR 264/265.17(b), the owner or operator of a facility that treats or stores ignitable or reactive HW, or incompatible HW and other materials, must take precautions to prevent reactions that:

- Generate extreme heat or pressure, fire or explosions, or violent reactions, or produce uncontrolled toxic mists, fumes, dusts, or uncontrolled flammable fumes or gases in sufficient quantities to threaten human health or the environment;
- Damage the structural integrity of the device or facility; or
- Produce other sources of harm to human health or the environment.



Step 3 40 CFR 264/265.17 requires that the owner or operator take precautions to prevent accidental ignition or reaction of ignitable or reactive HW. This HW must be separated and protected from sources of ignition or reaction including but not limited to open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive HW is being handled, the owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive HW.

Step 4 Compliance with these requirements must be demonstrated by the owner or operator. This demonstration may be based on scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses as specified by 40 CFR 264/265.13, or the results of the treatment of similar HWs by similar treatment processes and under similar operating conditions. Specifically, the waste analysis plan for the on-site analysis of wastes must include, at a minimum:

- Parameters for which each waste will be analyzed;
- Test methods that will be used;
- Sampling methods; and
- Frequency with which the initial analysis of the waste will be reviewed or repeated.

40 CFR 264/265.13 requires the waste analysis plan to include analyses needed to comply with 40 CFR 265.198 and 199, as specified in Step 2.

Step 5 As detailed in 40 CFR 265.200 (for interim status facilities only), in addition to the requirements of 40 CFR 265.13, if the owner or operator plans to use a tank system to:

- Store or chemically treat a HW that is substantially different from waste previously treated or stored in that system; or
- Chemically treat a HW using a process that is substantially different from the processes previously used in that tank;

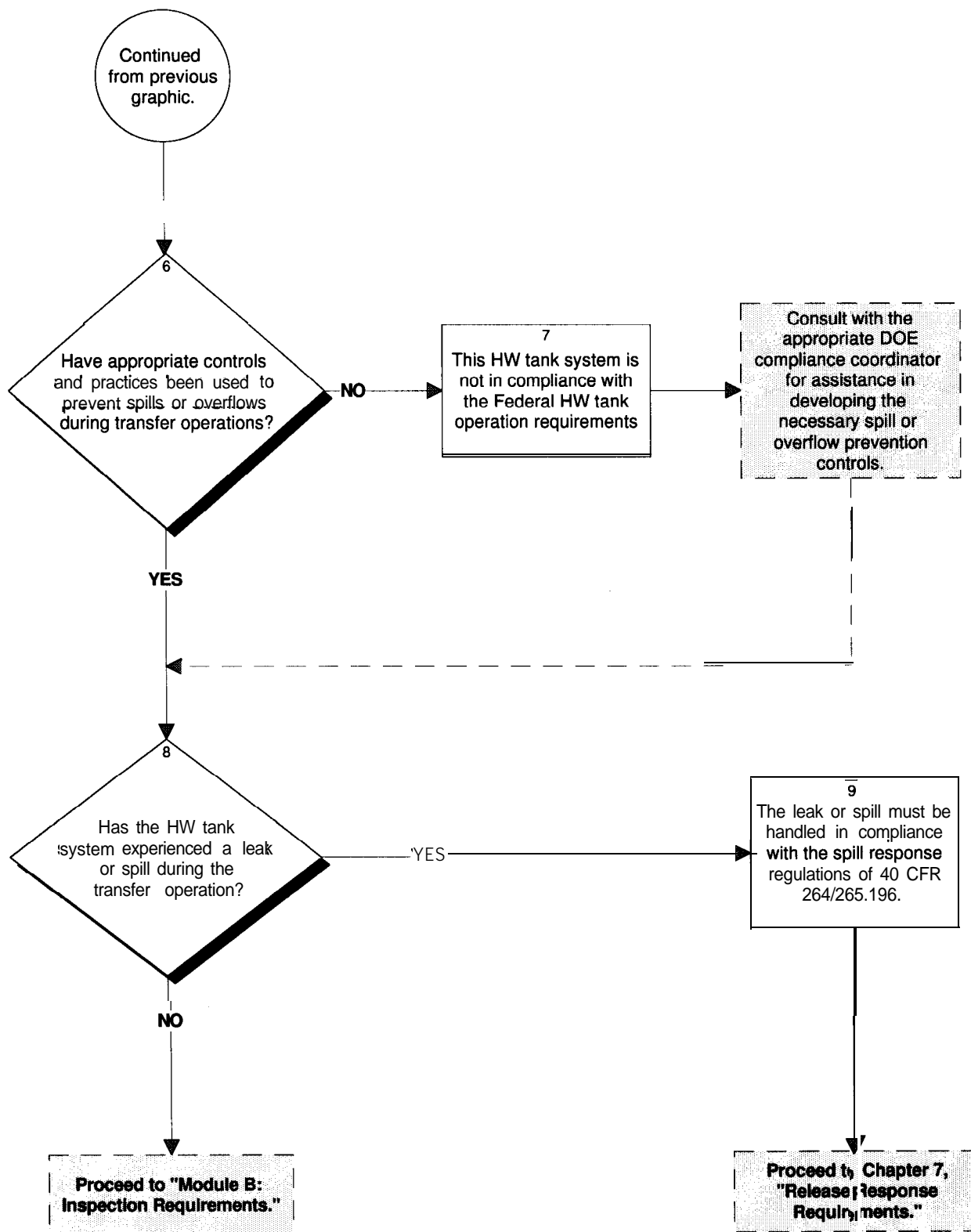
he/she must:

- Conduct waste analyses and trial treatment or storage tests (e.g., bench-scale or pilot-plant scale test); or
- Obtain written, documented information on similar waste under similar operating conditions

to show that the proposed treatment or storage will meet the general operating requirements of 40 CFR 265.194(a).

Note: 40 CFR 265.73 also requires the owner or operator to place the results from each waste analysis and trial test, or the documented information, in the facility's operating record.

Figure 6.1: Operating Requirements - continued



- Step 6** The owner or operator must use appropriate controls to prevent spills and overflows from tanks or containment systems. These include at a minimum:
- Spill prevention controls (e.g., check valves, dry disconnect couplings);
 - Overfill prevention controls (e.g., level sensing devices, high level alarms, automatic feed cutoff, or bypass to a standby tank); and
 - Maintenance of sufficient freeboard in uncovered tanks to prevent overtopping by wave or wind action or by precipitation.

Following are **recommended** practices applicable to the safe transfer of any liquid HW.

- No one should remain in the tank vehicle or leave the vehicle unattended during the loading or unloading process; - the delivery hose is considered to be part of the tank vehicle during the loading/unloading process;
- Loading/unloading of tank vehicles should be done in approved locations;
- To minimize the possibility of fire or explosion when transferring ignitable liquids, motors of tank vehicles or auxiliary or portable pumps should be shut down during making or breaking hose connections and, if possible, throughout the transfer of the liquid;
- Cargo tanks containing volatile, flammable, or combustible liquid should not be fully loaded. Sufficient space, or outage, must be provided to prevent leakage due to thermal expansion of the transferred liquid. One percent is the minimum recommended outage requirement;
- Delivery of Class I liquids to underground tanks of more than 10,000 gallons (3,800 L) capacity must be made by means of tight connections between the hose and fill pipe;
- No flammable or combustible liquid shall be transferred to or from any tank vehicle unless the parking brake is set securely and all other precautions have been taken to prevent motion of the vehicle;
- To prevent the accidental mixing of incompatible HWs and other materials, place labels, markings, or color codes on hoses, or use special couplings for transferring certain wastes; and
- Periodic inspections of hoses should be considered for leaks. [4]

Step 7 Lack of compliance with the procedures discussed in this chapter may result in a leak or spill that could have otherwise been prevented.

Step 8 Leaks or spills during transfer operations require an **immediate** response, especially in the presence of ignitable or reactive HWs.

Step 9 The owner or operator must comply with the requirements of 40 CFR 264/265.196 if a leak or spill occurs in the tank system. See Chapter 8, "Release Response Requirements" for these requirements.

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6.3 Module B: Inspection Requirements

6.3.1 Introduction

The proper maintenance of leak- and corrosion-free HW tanks requires the implementation of a daily inspection program. Inspection programs should be capable of identifying structural deficiencies such as:

- Excessive corrosion;
- Deterioration of liners;
- Cracking of welds and joints;
- Cracking of concrete tanks and secondary containment systems;
- Structural fatigue as evidenced by the cracking of metals; and
- Leakage from pumps, valves, or piping. [40 CFR 264.195]

Inspectors should give special attention to rivet holes, welded seams and brackets, valves, and bypass piping. [1]

Inspections must be conducted daily to comply with the requirements for tank system inspections. Careful records of the findings of each inspection must be kept in the operating log.

Information on inspection schedules must be included in Part B of the permit application as required by 40 CFR 270.14(b)(5).

Note: In cases where tanks are holding radioactive mixed waste, the owner or operator may encounter difficulties in meeting daily inspection requirements [i.e., for reasons of worker protection]. In these cases, the owner/operator is encouraged to coordinate with EPA or the state to determine alternative or modified approaches to satisfy the inspection requirements.

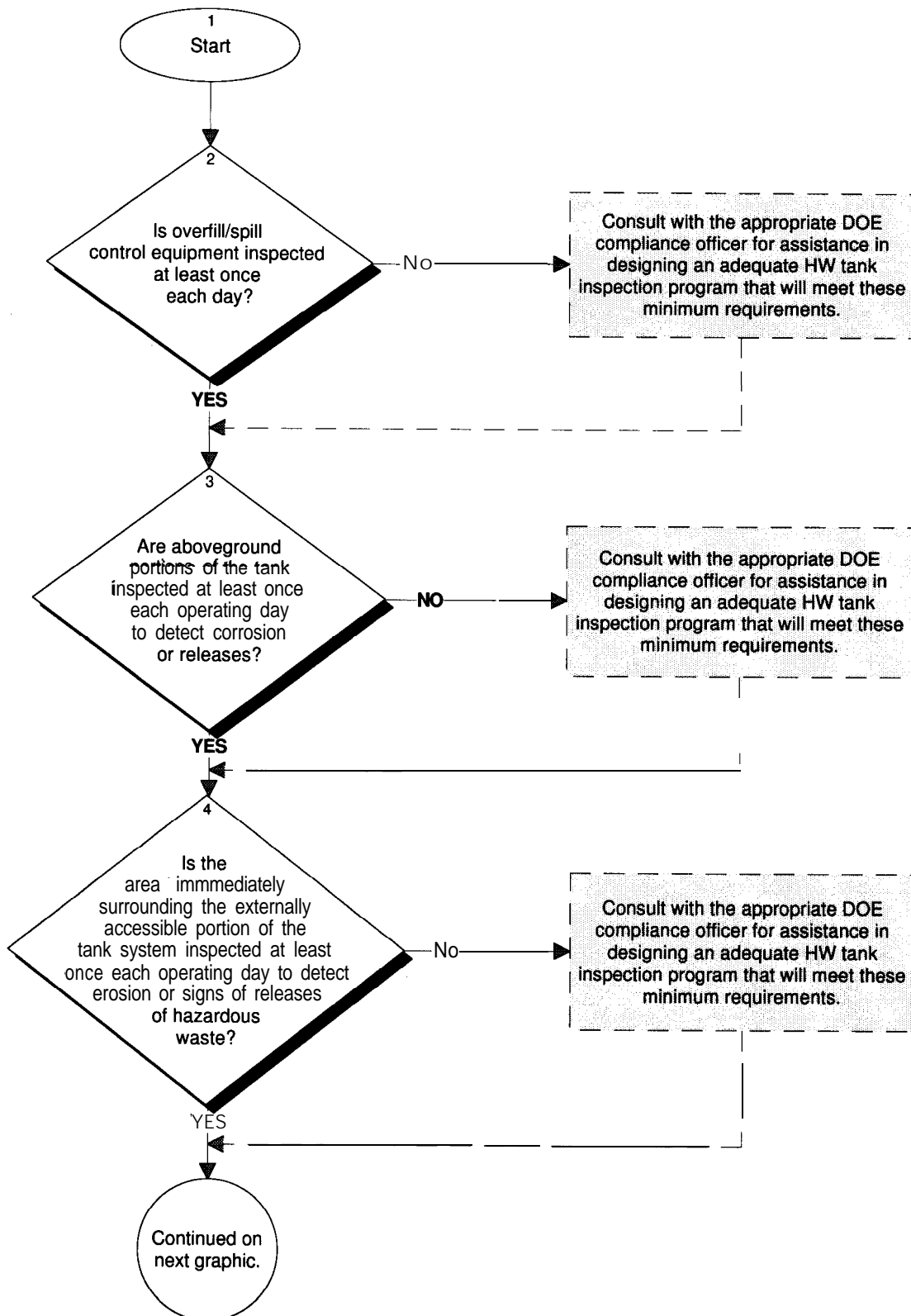
6.3.2 Milestones

Has an adequate inspection program been implemented?

- Many components of the HW tank system require inspection on a daily basis; and
- Proper documentation in the facility's inspection log is required.

The following flowchart details applicable inspection requirements.

Figure 6.2 Inspection Requirements



Step 1 Start

Step 2 The owner or operator must inspect overflow/spill control equipment (e.g., waste-feed cutoff systems, bypass systems, and drainage systems) daily to ensure that they are in good working order.

Important overflow controls and instruments include:

- Flow-rate controls;
- Level controls;
- Temperature gauges;
- Pressure gauges;
- Control valves; and
- Alarms and emergency shut off devices.

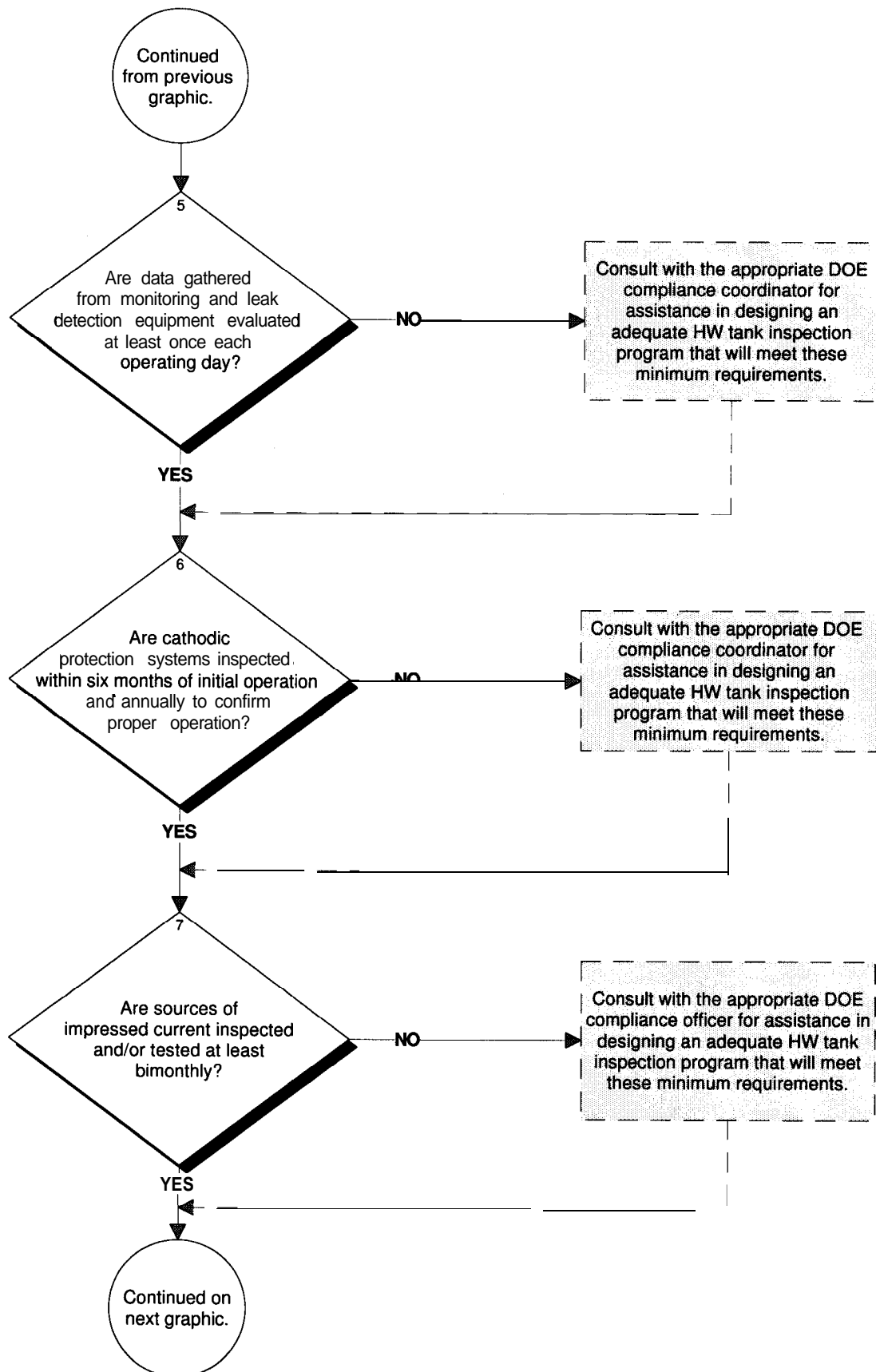
Elements that should be inspected include:

- Seals;
- Panels and enclosures;
- Operating mechanisms;
- Bearings;
- Electrical equipment; and
- Power supplies. [4]

Step 3 To detect corrosion or releases of HW, the owner or operator must inspect any aboveground portions of the tank system.

Step 4 The construction materials and the area immediately surrounding the externally accessible portion of the tank system, including the secondary containment system (e.g., dikes), must be inspected to detect erosion or signs of release of HW (e.g., wet spots, dead vegetation). Daily inspection should also include the following items:

- Releases or corrosion around nozzles and ancillary equipment of the tank system;
- Signs of corrosion on tank tops or roofs;
- Defective manhead gaskets;
- Buckles or cracks on seams and plates of the tank wall and bottom; and
- Deterioration of protective coatings as indicated by corrosion, blisters, discoloration, or film lifting. [4]



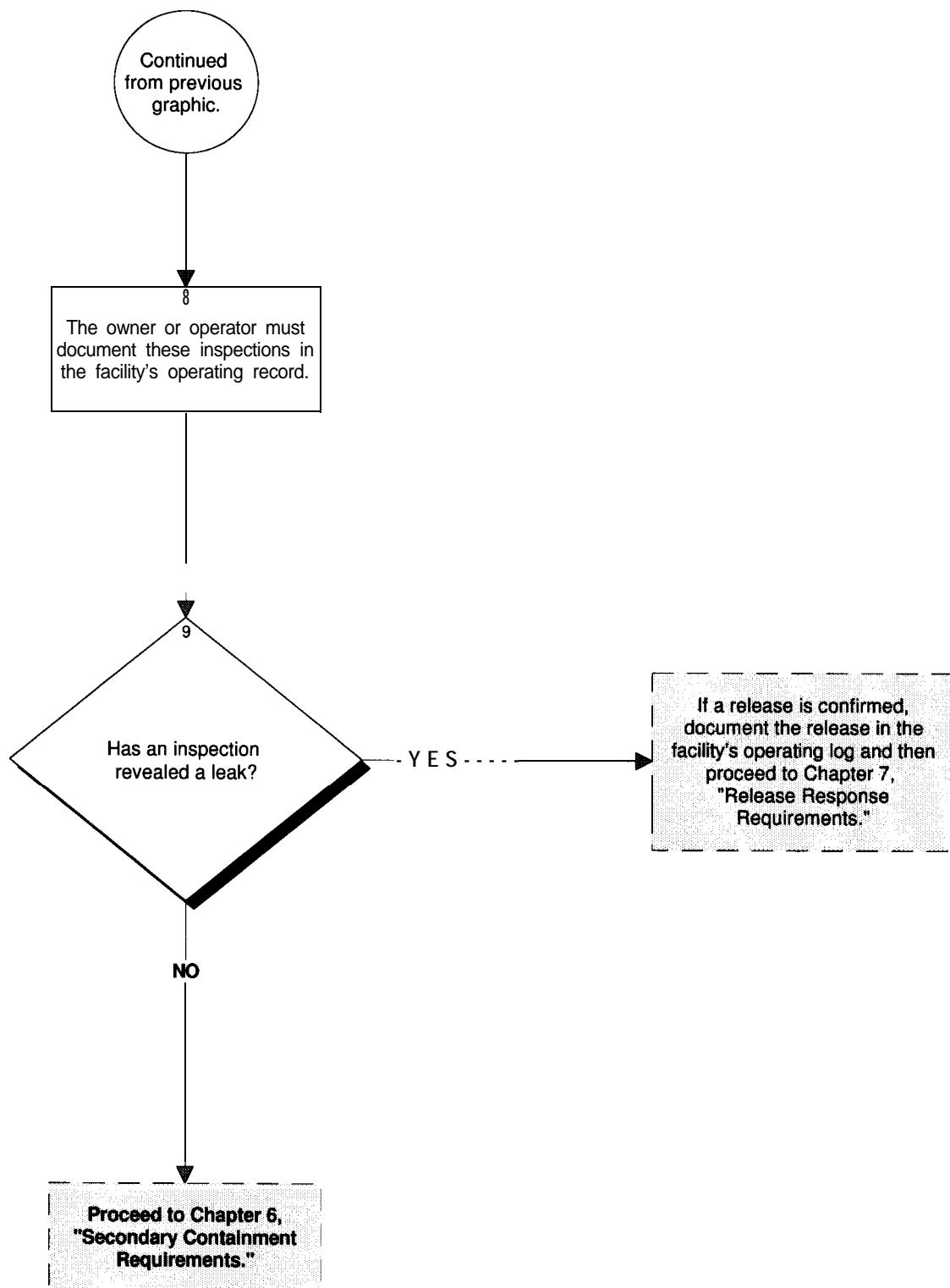
Step 5 Data gathered from monitoring and leak detection equipment (e.g., pressure or temperature gauges, monitoring wells) must be analyzed to ensure that the HW tank system is being operated according to its design.

Note: 40 CFR 264.15(c) requires the owner or operator to remedy any deterioration or malfunction that is found. 40 CFR 264/265.196 requires the owner or operator to notify the Regional Administrator within 24 hours of confirming a leak. Also, 40 CFR Part 302 may require the owner or operator to notify the National Response Center of a release. See Chapter 8, "Release Response Requirements" for the requirements of 40 CFR 264/265.196.

Step 6 Cathodic protection systems must be checked for electrical continuity and for failure that may be caused by broken wires, broken or shorted insulators, or loss of coatings. Also, changes in soil resistivity, moisture content, seasonal changes, etc., can impact the effectiveness of cathodic protection.

Note: The practices described in the NACE standard, "Recommended Practice [RP-02-85]--Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems," and the API Publication 1632, "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems," may be used, where applicable, as guidelines in maintaining and inspecting cathodic protection systems. [6], [7]

Step 7 Impressed current is a means for providing cathodic protection by utilizing the alternating current (AC) electrical power provided at a site. The AC is converted to direct current (DC) by a rectifier attached to the AC power source. The DC output from the rectifier flows from the buried impressed current anode(s) through the soil and to the tank. Impressed current anodes are usually composed of such materials as graphite, high-silicon cast iron, platinum, magnetite, or steel. Malfunctions usually occur because of power interruptions, improper operation of rectifiers, damage to insulation, deterioration of anodes, or broken wires. [4]



- Step 8** The owner or operator must document all inspections in the operating record of the facility. The maintenance of up-to-date, legible, permanent records are vital for providing proof of compliance with the inspection requirements of 40 CFR 264/265.195.
- Step 9** The owner or operator must take immediate steps to contain and clean-up the spill. Chapter 7 presents applicable release response and reporting requirements.

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